

# MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association,  
Northern Minnesota Medical Association and Minneapolis Surgical Society.*

Vol. IX

DECEMBER, 1926

No. 12

## THE PROFESSION\*

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Mr. Toastmaster and ladies and gentlemen: Never was I under greater responsibility: that imposed by the title which you have given me, to which none of us can do credit, and this introduction which increases manifold my obligations.

"Our Profession," the first historically of all the professions, and, still, we believe, the noblest of them all; our profession, the same from beginning and yet ever changing. Like a stream which begins in the wilderness as a small trickling brook and which gradually gains in volume, now a raging torrent, now spreading out into marshes where malaria abounds, now again gathering itself together as a stream which gives power and health to the community, so our profession from the beginning of history has been ever the same, and yet ever changing, one continuous stream of thought which has flowed to us down through the ages.

You say, "Oh, that is not true, the medical profession has never had its torrents." Has it not? Look over your patients for scars of operations no longer performed, *e.g.*, those for the suspension of various internal organs, for the shortcircuiting of various parts of the bowel; you men of internal medicine, look over your shelves for the bottles of the different vaccines that you gave years ago and do not now. Haven't we had our enthusiastic short-lived fads? Haven't we had our mental torrents? May we have no more of them.

You say, "Oh, but medical thought has never become stagnant like a marsh." Oh yes it has, and it is those stagnant marshes which are my subject to night. First of all, there have been periods of stagnation due to theology. Do not

misunderstand me. I am a Presbyterian elder, and of this I am proud, but I recognize that the influence of religion on medicine has at certain periods been one of which I am not proud. We shall not dwell at length on the history of medicine, you would not be willing to listen to that, but we would refer to the medicine of Egypt which was good until the priests got political power, and then died because priests combined medicine and theology into one dogmatic system. We would mention the Jews, who had no medicine because they believed that all physical diseases were due to sin, hence the obvious conclusion in the presence of sickness was "repent and sin no more." This was the theology and the medicine also of the old Puritan days, and even of my own boyhood days, for the Puritans taught that all disease was due to sin, and that the man who by medical means sought to relieve sickness was a coward trying to escape a well merited punishment. Surely where such belief abounds medicine will stagnate.

It is only too true that in the past all relationships between theology and medicine have proven disastrous for medicine. Why do I emphasize this? Let me again call attention to the fact that there is nothing that I would less willingly do than in any way to throw a slander on religious organizations; nevertheless we doctors *must* enter more into the religious lives of our patients for there abides one of the most potent of therapeutic agencies. How can we of the medical profession get control of that therapeutic power which abides in their spiritual life? This we cannot afford to overlook any more than we can afford to disregard modern surgery, roentgenology, or radium. Indeed the next great problem before the medical profession is to control spiritual forces with some degree of accuracy.

Our plea is not that doctors should get a little more pious. The fact is that research work in the laboratories of so-called cold-blooded science has brought us face to face with the conclusion that just as a man's mental health and physical

\*Banquet address at the annual meeting of the Minnesota State Medical Association, St. Paul, May, 1926.

health, formerly held to be separate, prove to be one and the same, so now we see that a man's spiritual life, his mental life, and his physical life are inseparable, and that further progress demands that we develop them all together.

Oh yes, there have, historically, been great marshes, great and stagnant marshes, along the stream of medical thought and some of these mark the periods when the church got control of medicine. How now may we enter this field and yet avoid a dogmatizing theology?

Then there were other great stagnant marshes along the course of the stream of medical progress which were produced by law. You may remember the great lawmaker of Babylon, Hammurabi. Before his day Babylon had a medical profession while centuries later it had none. We know that his laws governing medical practice were far too definite and it is quite possible that they in part at least killed medicine. You may remember that, later, Herodotus visited that great country and summed up the situation with the brief words, "For there are no doctors there."

Don't misunderstand me. I congratulate you on your interest in the different laws which now engage your attention. I certainly would not imply that there should be no medical legislation, but would say that the practicing profession should not seek any protection for itself through legislation. The public should be protected and doctors certainly should take it upon themselves to see that all public health legislation is right, but please remember that medicine, to be good and accurate, to be as beneficial as possible for our patients, must be the product of an evolution that flows on freely without any impediment, and he who makes shackles for others only forges fetters for himself. Of course we must have medical practice acts which will guarantee to patients physicians who are honorable and well trained, but they must not in any way define how doctors shall treat disease. We should fight every law which dictates or hampers us in our work, but we also should refuse to accept any legislation which seems to favor the medicine of today, because it will only hamper the medicine of tomorrow.

Law has, in the past, made medicine stagnant. May it never again in the future.

Oh yes, there have been stagnant marshes in the evolution of medicine, but there also have been periods when the stream ran very pure, even purer than today, and of one of these

periods, that of Greek medicine, we would for a moment speak.

Don't get frightened; I am not going to talk much ancient history, but we Americans boast that we are the Greeks of modern times. I certainly hope we are, because theirs was an example worth our attention.

One reason why the Greeks were able to produce a medicine of such pure quality may be that Greece was a country so divided into small districts by mountains that no priesthood as well as no politician ever could unite the Greeks on one single policy. One result was that the medicine of Greece was able to develop free from the shackles of theology and of law, and so became a stream of pure thought.

We sometimes say that the Greeks were a race of geniuses. We recognize that the art of the Greeks is the best that we have; that the philosophy of Greece is the source of modern philosophy; that the literature of Greece is the example of the ages; and yet the Greeks were not a race of geniuses. Indeed there never was a Greek race. There was a Greek nation, yes, but it was made up of so many different races from all parts of Europe, Asia and Africa, mingled together, that the Greeks have been called the "splendid mongrels" of history. How then if there was no Greek race and no pure Greek blood could such geniuses arise. Because they had a culture which encouraged the best that there was in every man; because they gave each man a chance to develop the best that there was in him, and they made a market for the best that he could produce. With no inheritance of genius, with no great racial ability, only a mongrel race, yet it was able to produce the finest in art, literature, philosophy and medicine, chiefly because it created a market for the best that was in man.

Oh men of Minnesota, oh physicians of America, demand the best that is in every doctor, demand the best that there is in our universities, demand the best that there is in our state medical societies. We may have to work harder to keep up with the stream of progress which this would create, but let us demand the finest. Let no jealousy disturb us. Let us make a market for the best there is in medicine. Let us jealously defend the best in medicine. If we develop a market for the finest, highest quality in medicine, then shall we really be the Greeks of the modern day.

But the danger of periods of stagnation in the progress of medicine is not past. We have suffered from the dogma of theology and the dogma of law but the great danger of the dogma of misapplied science is before us. American medicine is now living in a rather dangerous period of history, a period in which the medicine of France and of England has become replaced for a while by the laboratory medicine of Central Europe, where it bore splendid fruit, but, which, like an exotic plant, has not prospered on American soil. What are the results? One is illustrated by a meeting which the American Medical Association called together last winter and asked, "Why can't we have periodic examinations of the apparently well?" And an absurd conclusion was reached that medical schools should give special courses on the examination of the well, since "that is quite different from the examination of the sick." That is, that doctors can't view a patient unless through the spectacles of X-ray plates, Wassermann tubes or microscopes.

Of course laboratory methods are an indispensable help but they cannot make our diagnosis for us. They are indeed valuable in direct proportion as our personal physical examinations into the history and physical condition of the patient are accurate. This is the backbone of medicine and this spine we are weakening. This we should not do. Medicine has, from the very beginning of its history, had one quality, and that is self-sacrificing service for suffering fellowman, and medicine has won success through one method only, and this is to enter sympathetically in the problems of the patient, to try to understand what his problems are, to confirm our suspicions by proper laboratory methods, and then to try to help him. The medicine of the future has, among many, one method necessary to its success, and that is to focus all of its laboratories onto the problem of the patient, and not to ask the patient to solve the problem of the laboratories. A reform is necessary and this reform will involve certain radical reorganizations of our methods. One of these is due attention to environmental medicine.

William Osler in looking over his clinic one day said, "What a pity, what a pity! Here are about forty persons here this morning and we can't help more than three out of ten." One assistant asked, "Why not?"

"Because we are not equipped to help the other

seven, since their problem is social, industrial, etc., but not primarily physical."

There were certain men there who had indigestion, i.e., abdominal pains, nausea, vomiting, gas, acid, and the rest. If they needed medicine they got it; if they needed a surgical operation, they got it; but if after three days of x-ray work, laboratory study and gastric-juice analysis the conclusion was that the wife couldn't cook or that the patient was so worried that he couldn't digest his food, we dodged the issue. It is, however, just as much our moral obligation to teach that wife how to cook, to relieve that worry, etc., as to give medicine or perform operations. It is, granted that we are honest in our desire to cure the man whom we accept as a patient. They don't know, and we don't know at first, what the matter with them is. They trust that we will find out, and we usually do. We don't at first know, and they don't know, what the therapy should be in order that they may be relieved. Are we intellectually honest enough to do all we can to help them? I haven't been; you haven't been. We were willing to give them the surgery if they needed it; we were willing to give them the medicine if they needed it; but we have not been willing to enter into their social or spiritual life if that is what they needed. And yet here are the patients and here is the problem. They present it to us; we accept it. If as a result of all of our x-ray work, all of our laboratory work, we find it is worry or social maladjustment, are we willing to go into their social life, to enter their emotional life?

Again may I call your attention to the fact that that is not any new, theoretical, rather idealistic point of view. It is the result of research work in laboratories and clinics. We must enter more into the social and industrial life of our patients if we really intend to help them, if we really intend to do the best we can for them. To meet those troubles with which the patient comes, if we really are trying to be honest, we will have to develop a social and a spiritual organization in our hospitals, in our offices. So that we may do what? Merely cure the man of the trouble with which he comes and which now we are treating by medicines and surgery, meanwhile drawing a line at anything else, however necessary?

Medicine, like a stream, has started with small clear rivers up in the mountains and then has

flowed down through many countries, through many ages. What the future holds for us we do not know; but God bless the medical profession, and may it remain the profession which will do its level best to solve each new problem presented to it.

#### UNQUALIFIED PRACTICE IN GERMANY

The medical department has published statistics on the number of unqualified persons engaged in medical practice. Their number could be ascertained with accuracy, as according to law they must be registered by the authorities for reasons of control and taxation. Their number rose from 5,063 in 1923 to 5,648 in 1924, being an increase of 11 per cent. Their clientele is largely composed of members of educated classes and they are consulted often for financial reasons, as they are believed to charge less than a qualified medical practitioner. Also the predilection for mysticism prevailing since the war, together with frequent advertising (not allowed to the medical profession), has aided to make unqualified practice popular. The report stated that 300 unqualified people were prosecuted, of whom 200 were punished; 47 prosecutions concerned the prescribing of drugs reserved to the medical profession; 43 were for artificial abortion; 33 for practice without fixed residence; 36 for offences against registration regulations; 27 for using a title similar to that used by qualified medical men; 24 for causing injury by neglect; 8 for causing death by neglect; 19 for indecent advertistments; 7 for unfair competition; 6 for libels on medical men; 3 for offences against public morals. The complaints were mostly lodged on behalf of the Society for Combating Unqualified Practice.—*The Lancet* (London), June 26, 1926.

#### HARROWER'S ORGANOTHERAPEUTIC INDICATOR

To advertise its pluriglandular products, the Harrower Laboratory uses a device containing an "indicator" in the form of an arrowhead, the shaft of which is a slot in a disk, superimposed on a larger disk. Around the edge of the larger disk are the names of some seventy diseases or disease conditions. When the arrow is rotated to point to any one of these names, one or two numbers become visible through the slot: these refer to the list of "pluriglandular formulas" on the back of the disk. Each condition has its appropriate (?) formula. The Council on Pharmacy and Chemistry has reported on a number of Harrower gland mixtures, pointing out the lack of evidence for their efficiency when given by mouth and also the irrationality of prescribing mixtures that resemble those of the old fashioned shotgun nostrums. The fact that it is apparently profitable for the Harrower Laboratory, Inc., to send out such advertising as that described, is a sad reflection on those physicians who allow themselves to be influenced by "literature" that is sent out by commercial houses. (*Jour. A. M. A.*, Oct. 16, 1926, p. 1322.)

#### CONGENITAL CLEFT LIP AND PALATE; A SERIES OF CONGENITAL CLEFTS\*

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*Saint Paul*

In the few years of my interest in this subject I have found that there are two phases of the subject which overshadow all others in general interest. No matter what part of the problem is under discussion two questions always arise. Couched in the phraseology most frequently used, the two are: "When do you do these things?" and "How many operations are necessary?" The questions are important to those of us who assume the responsibility of repair, to the practitioner who advises patients of proper procedure, but more than all else are important to the people themselves. It requires no elaborate statement or proof to impress upon anyone the consternation and horror that parents of these deformed newborns suffer, not only at their own misfortune but in their concern for the child and its future. Beyond the feelings of love and sentiment the economic aspect looms large.

The two problems expressed in the questions early arose in my work. To solve them the literature was closely studied, to find a great variance of opinion, not only as to the time and number of operations but also as to their sequence. Ideas as to the time question varied from early infancy to maturity, sometimes specific as to lip and palate, sometimes uncertain in expression. The number and sequence discussion led to a situation rather peculiar to this field of surgery: a controversy often phrased in terms so extreme as to bring up the question of the value of it all to scientific progress. At first I thought that much of the controversy was due to personal reasons; support of a special operation, interpretation of a surgical principle, confusion of terminology. Soon I found myself admitting one phase, deprecating another. In other words I entered into the controversy, but soon decided that the situation resulted from no fault of the individual but was definitely fundamental due to the conception of the general

\*Read before the annual meeting of the Northern Minnesota Medical Association, Crookston, August 9 and 10, 1926.



subject upon which the wonderful literature has been built.

With these things in mind, Dr. John Staige Davis and I, at the St. Louis meeting of the American Medical Association, offered another point of view in the belief that if there were to be any logical conclusions in this field a change of approach was necessary. The literature has been formed upon the original idea—a dual point of view indicated by the title "harelip" and "cleft palate." The change suggested is that we rediscuss the various problems on the basis of a series of congenital clefts. Any cleft in this location is the result of failure in the same embryonal process of closure, therefore no cleft is more important than another unless it appears so in a given case.

The essential of this plan is that the complete palate of the literature of the last hundred years is now resolved into its component clefts, and the term "harelip," which so many writers have recognized as an inapt, unscientific term, is erased. This plan is to be

used for the purpose of exactly describing each cleft separately because in no other way can the exact arrangement of the tissues be recognized and recorded.

Analysis of the series reveals that each cleft involves different tissues, requiring different principles and efforts in its repair, that is, each is an entirely different operation.

Take the lip. This involves consideration of the muscle, skin, and mucous membrane, tissues with which we are dealing in all parts of the body irrespective of age, and so here from a purely technical standpoint these tissues can be repaired at any time of life.

Take the alveolar process cleft. This cleft involves the process of the superior maxilla and is the most evident index of the malposition of this great bone. Bone because of its structure presents an entirely different operative problem from that of soft tissue. Experience has shown that in many cases this bone of the face is still soft and pliable at birth and that by pressure will permit of a wide excursion of position. Experience has also shown that this bone may be nearly fixed at birth; also a short time after birth may become so set in its cleft position that it cannot be moved except by slow and tedious process or by fracture. If this observation is true then it becomes a reasonable conclusion that

any baby with an alveolar process cleft must have something done to close this cleft at the earliest moment compatible with the condition of the child.

Take the hard palate cleft. This appears in some instances as a bone problem and has been approached as such. But the quite constant position of the

palatal process is one of varying degrees of obliquity. Were these palates always in line, then lateral pressure would lead to proper contact, but since this is not so, lateral pressure quite often increases the deformity, and ends in the high arched palate so frequently seen where this principle has been used. I believe that the repair of the hard palate cleft from the viewpoint of bone carries too great a penalty, and that the muco-periosteal flap or, as Brown has recently suggested, a muco-periosteal-osteal flap aspect is the proper one. When we get into the flap field in this location or indeed in plastic surgery elsewhere in the body we



A photograph of the lip and cast of the same case. This combination of clefts is the most frequent in incidence. It is to be studied as a series of clefts—the lip, alveolar process, hard and soft palate—each one independent of the others.

have a great variety of forms—turnover flaps pedicle flaps, sliding flaps, septal flaps—in various situations and extent. It is this wide choice of forms that has yielded so many so-called palate operations. When we study this muco-periosteal covering of the palatal process in the newborn it appears as a thin delicate structure, almost transparent in appearance. The expectation that it will early stand the quite severe traumatism of elevation and suture with perfect healing, exceeds greatly in my idea and experience the possibilities of this tissue. In spite of this, operators have been influenced by the expressions, palate first or palate early, to attack this tissue at a time when failure is surely invited. I believe that the baby must be well grown and developed, seldom under a year, preferably much older, before an attempt shall be made to close this cleft.

Take the soft palate cleft. This is an operation very similar to the lip, involving mucous membrane and depending for its function on the exact union of the muscle tissue. But it differs from the lip in its location, and lies in a position where it is constantly exposed to irritation from food, act of crying, etc. This tissue must be well developed before it should be attacked. I have placed it along with the hard palate in time, because so often it is possible to do both operations at one sitting.

Now we are in position to answer the proposed questions. Any baby with the cleft of lip, process, hard palate, soft palate, that is, with all the clefts present, requires a separate operation for such cleft. What operation or combination of operations is to be done at one sitting is entirely within the choice of the op-

erator. The only cleft that requires early and prompt repair is the alveolar process cleft, because the longer it is left and the older the baby the more difficult it is to close.

What we are teaching our students now is: Examine the baby, not as a harelip and palate case, but to determine how many clefts are present and which is the most important. Never mind the lip and palate but find whether the process is cleft or normal. If it is normal then time of operation is unimportant; if it is cleft then something should be done to the process as early as possible.

To my mind this answers the question whether to do the lip or the palate first. The answer is you do neither first, but rather the alveolar process first. The importance of the condition of the alveolar process was recognized by us and made the foundation of the classification wherein all cases fall readily into three groups, giving us the wonderful opportunity of studying our cases by subdivision of these groups into form and degree.

In conclusion, the number of clefts present determines the number of operations. The only cleft requiring early closure is the alveolar process cleft. However, my experience indicates that no cleft or combination of clefts shall be considered an emergency situation. A very satisfactory mortality record, I credit not to any expert work on my part but to the appreciation that no baby shall be operated upon until it is passed by a pediatrician and is well established in feeding and distinctly on the gain. To this fact is added the equally important one, that the hard and soft palate operations are never early but always late procedures.

#### POTASSIUM CHLORATE TABLETS

The saturated solution of potassium chlorate has been much used as a mouth wash in stomatitis. It is also employed as a gargle in the treatment of pharyngitis. Its value in these conditions is, however, uncertain. Holding tablets of potassium chlorate in the mouth gives a more thorough medication and probably does no harm if one tablet is used at intervals of an hour or two. The internal use of potassium chlorate is no longer recommended. Large doses are actively poisonous. (Jour. A. M. A., Oct. 16, 1926, p. 1323.)

#### VACCINE TREATMENT OF COLDS

It is not definitely known whether or not a cold is the result of a specific infectious process. The prophylactic as well as the curative value of vaccine therapy in this condition is therefore quite problematic. What we know about the nature of the affliction makes it highly improbable that much good can be accomplished by means of vaccine, and clinical experience seems to substantiate these deductions. (Jour. A. M. A., Oct. 23, 1926, p. 1412.)

THE MANAGEMENT OF PATIENTS  
WITH GOITER\*

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In this portion of the United States one is so frequently consulted by patients for advice in regard to a goiter that I thought it might be of interest to review the common types of goiter seen clinically and to discuss the treatment which seems indicated in these types.

So many and such complicated classifications have been suggested for goiters that they have tended to confuse physicians who see only a few patients each year with a goiter. For some years we have followed the idea of Dr. H. S. Plummer as to the different types of goiter seen and I feel that the classification which he uses is the simplest and the most accurate that has been suggested. He feels that we see three common clear-cut types of goiter—colloid goiter, adenomatous goiter and exophthalmic goiter—and that nearly all patients with goiter have one of these three types or a mixture of these types. We do see some of the rarer thyroid diseases, such as thyroiditis, carcinoma, tuberculosis, etc., but they occur so infrequently that I will not consider them in this discussion.

## COLLOID GOITER

Colloid goiter occurs in young individuals and is not associated with hyperthyroidism. The entire gland is involved in the process and a symmetrical, "butterfly type" of enlargement of the thyroid gland occurs. The enlargement in such cases may be so slight as to produce only a fullness in the neck, while again it may produce a large goiter. The gland upon being palpated has a soft, granular feel and lacks the hardness usually seen in exophthalmic goiter and the irregular nodules found in adenomatous goiter. Some patients with colloid goiter become nervous over the presence of the goiter and may also show an increase in pulse rate but when such patients have been placed in bed for a few days the metabolic rate will usually be found to be about normal. If the metabolic rate persists above normal after patients have been rested in bed, the condition usually proves to be one of exophthalmic goiter. Colloid goiter develops through the deposit of colloid material in the acini of the thyroid gland.

Sections of such glands show when examined under the microscope acini filled with colloid material. The epithelial lining of the acini is low and flattened in type and distinctly different from that seen in exophthalmic goiter.

Colloid goiter is the one type of goiter which may be cured through the administration of medicine and in young patients the goiter, in many instances, may be made to disappear through the proper administration of thyroxin or desiccated thyroid and, in young individuals with colloid goiter, such treatment is preferable to operation. Treatment of this sort should be used only in young individuals and they should be carefully watched during the course of the treatment in order to see that hyperthyroidism does not develop. In older patients with colloid goiter it probably is best to either leave the goiter alone or to remove it surgically and then to administer small doses of iodine, as experience has shown that older patients with goiters which are not producing hyperthyroidism are likely to develop hyperthyroidism when treated with iodine.

## ADENOMATOUS GOITER

Adenomatous goiter is probably more often seen than any other. It, too, usually begins in young individuals and produces a nodular, irregularly shaped enlargement of the thyroid gland. It develops through the growth of small encapsulated adenomata which are usually scattered throughout the thyroid gland and which compress the thyroid tissue as they enlarge. When palpated, adenomatous goiter can usually be recognized by the rounded or irregularly shaped nodules which are felt in one or both of the lobes of the thyroid. In younger individuals it is not associated with hyperthyroidism. After the age of 30 adenomata frequently undergo degenerative changes and hemorrhages occur within their capsule; then various degenerative changes follow which produce the goiters which have been referred to as cystic goiters, calcareous goiters, hemorrhagic goiters, etc. All of these types, however, should be looked upon as degenerating adenomata and not as definite clinical entities. The largest goiters seen belong to the adenomatous group and nearly all cancers of the thyroid develop on adenomas in patients who have reached the cancer age.

Our statistics show that over 20 per cent of the patients who consult us with adenomatous goiter have hyperthyroidism but hyperthyroidism is seldom seen in patients under 30 years of age.

\*Read before the annual meeting of the Northern Minnesota Medical Association, Crookston, August 9 and 10, 1926.

The type of hyperthyroidism seen in adenomatous goiter differs from that seen in exophthalmic goiter and, in order to differentiate it from the hyperthyroidism seen with exophthalmic goiter, is usually referred to as "hyperthyroidism associated with adenomatous goiter" or "adenomatous goiter with hyperthyroidism." The hyperthyroidism which occurs in adenomatous goiter is similar to that seen in patients to whom thyroid extract has been given over a sufficiently long period to produce hyperthyroidism. Such patients show nervousness, tremor, increased pulse rate, weight and strength loss, flushed skin, increased sweating, increased metabolic rate, etc., as is seen in all patients with hyperthyroidism, but do not develop, as we see in exophthalmic goiter, exophthalmos, nor are they subject to the crises which occur in exophthalmic goiter. The hyperthyroidism seen in adenomatous goiter develops very insidiously and, no doubt, often exists for a long period before patients are aware of its presence. Many patients with hyperthyroidism from adenomatous goiter consult us for heart trouble without associating the heart symptoms with the goiter. The hyperthyroidism seen in adenomatous goiter does not produce the high metabolic rates seen in exophthalmic goiter and it is not often that we see metabolic rates above 60 or 75 per cent in this type of goiter.

Medical management of adenomatous goiter is, as a rule, unsuccessful and we know of no medicines which will cause such goiters to disappear. In some young individuals a considerable amount of colloid material is present in the thyroid tissue surrounding the adenomata and by administering thyroxin or thyroid extract this colloid material may be made to disappear. The goiter may be somewhat diminished in size by such treatment but the adenomata remain about the same in size and oftentimes are made more prominent through the disappearance of the colloid material from the gland.

When consulted by young individuals with adenomatous goiter we usually advise that the goiter be left alone until the age of 25 or 30 years is reached, when we advise a partial thyroidectomy. Operation is delayed until that time for several reasons: first, because experience has shown that hyperthyroidism is not likely to develop in such patients, left untreated, before the age of 30; second, because the thyroid, no doubt, has considerable influence on the physical and mental development of younger individuals and

for this reason it seems best not to disturb the gland until full development has been attained; and third, because the growths are usually multiple and in many early cases so small that some may easily be overlooked at operation. Adenomata left undisturbed at operation usually continue to grow and in this way produce a recurrence of the goiter. The risk of an operation for the removal of adenomatous goiter in patients in good health between the ages of 25 and 30 is so small that it seems better to have patients accept this small risk than to allow the goiter to remain and thus subject them to a risk which runs higher than 20 per cent of later developing hyperthyroidism. The size of the adenomata apparently has little to do with the possible later development of hyperthyroidism and we have seen active hyperthyroidism produced by single adenoma which measured not more than  $\frac{3}{4}$  or 1 inch in diameter. When consulted by patients who already have developed hyperthyroidism from adenomatous goiter we advise an operation provided the physical condition of the patient will permit this being done. Unless an operation is advised in such cases the degenerative changes in the muscles of the heart and other vital organs will continue and when these changes have become very marked even though a thyroidectomy is performed, it is impossible to restore patients to normal health.

Patients with adenomatous goiter not associated with hyperthyroidism and those with mild hyperthyroidism in whom no great cardiac damage has occurred may usually be operated upon without preparation.

Patients with marked degenerative changes in the heart and other organs who show evidences of cardiac decompensation through dilatation of the heart, shortness of breath and auricular fibrillation are usually first placed in bed for a few days. They are then allowed to get up a few hours each day and are operated upon without further preparation or delay. When edema and ascites are present patients are placed in bed for a longer period of time. If the edema and ascites are slow in disappearing, digitalis is often administered until this has disappeared. The digitalis is then discontinued and the patients are allowed to get up for a short period each day. The length of time they are allowed up is gradually increased until they are up most of the time and then the operation is performed. Our operative mortality has been lower after treating pa-



tients in this manner before operation than after preparing them by a prolonged period of rest in bed and digitalis.

#### EXOPHTHALMIC GOITER

Exophthalmic goiter may develop at any age but is usually seen in patients under forty. The changes which are present in the gland are diffuse in character and usually involve the entire gland. The gland enlarges fairly symmetrically and often produces a "butterfly type of enlargement" similar to that seen in colloid goiter. The gland is much harder than that seen in colloid goiter and, as a rule, is not nodular like the gland seen in adenomatous goiter.

Exophthalmic goiter produces the symptoms usually seen in hyperthyroidism, such as nervousness, tremor, increased pulse rate, weight and strength loss, flushed skin, sweating, increased metabolic rate, etc., and in addition usually produces, if the disease persists sufficiently long, thyroid crises and exophthalmos.

If left untreated the disease in most patients tends to run quite a definite course although we find that the severity differs in different individuals and in different sections of the country. Most patients who develop exophthalmic goiter if left untreated have a gradual increase in the degree of hyperthyroidism for about six months and then have a thyroid crisis. During the crisis they become very sick and often have vomiting and diarrhea with much mental disturbance and a very rapid pulse. The weight and strength loss during such periods is very rapid. These crises last from a few weeks to a month or two and many patients have died during such periods. When the crisis subsides patients begin to improve and although the hyperthyroidism persists usually gain in weight and strength and feel better in every way. After a period of about two years a second crisis often develops and, later, even a third. Eventually the disease tends to wear itself out but most patients by this time have had such great damage to the heart and other vital organs that they are left as physical wrecks.

At the present time operation offers the best chance for relief of the disease. If the operation is done early in the course of the disease it may be done with slight risk, on account of the lack of degenerative changes in the organs, and the results which follow an operation done at this time are very much better than when it is done later. Patients operated upon before marked de-

generative changes have occurred and before exophthalmos has developed, in many instances, may be brought back practically to a normal state and are able to resume their normal station in life. The results from operation, however, depend to a great extent upon the duration of the disease and the amount of degeneration which has occurred. The hyperthyroidism may be controlled at any time during the disease by the removal of a sufficient amount of thyroid tissue, but it is impossible to restore the degenerated organs to normal.

At the present time we know of no medical treatment which seems specific in curing exophthalmic goiter. No doubt, certain patients recover spontaneously and from non-operative treatment but the per cent is not large and patients are likely at any time during the course of the treatment to develop a crisis; during a crisis such great damage may come to the vital organs as to leave the patient a permanent invalid in spite of any later treatment used.

Ligations have frequently been performed in exophthalmic goiter because it was found that after ligations, patients gained in weight and were better able to stand the acute hyperthyroidism which often developed after the thyroidectomy. During the past three years Plummer and his associates have shown that dangerous post-operative hyperthyroidism may be practically eliminated by preparing patients with exophthalmic goiter by administering iodine before the operation. Iodine can not be looked upon as a cure for exophthalmic goiter but it seems to possess the power of taking from patients something which produced the postoperative crises. Through such preparation it is now possible to do thyroidectomies upon practically all patients without previous ligations. A primary thyroidectomy saves the patient much time and expense and often several months of active hyperthyroidism. The latter is extremely important because, in many of the patients operated upon previously, the two or three months active hyperthyroidism which persisted between the ligations and the thyroidectomy was just enough, on account of the great damage which occurred to the vital organs during this time, to spell the difference between a good and a poor end-result.

Through the use of iodine the hyperthyroidism seen in exophthalmic goiter tends to change from one which resembles that seen in adenomatous goiter or that produced in patients by giving large

amounts of thyroid extract. It is also possible through the use of iodine to very rapidly cause the thyroid crises seen in exophthalmic goiter to disappear and through such treatment many patients first seen during a crisis may have a primary thyroidectomy from ten days to two weeks later with a high degree of safety.

The metabolic rate gives a very accurate estimate of the degree of hyperthyroidism which exists at the time that it is taken but alone can not be used as a means of determining just when an operation should be performed for exophthalmic goiter. In some patients quite a high metabolic rate may exist without symptoms which would lead one to feel that a crisis was impending. While again we might see another patient in a crisis with a much lower rate.

As a rule, patients with hyperthyroidism from exophthalmic goiter are treated, as soon as the diagnosis has been established, by administering iodine in the form of Lugol's solution (compound solution of iodine) in doses of from 30 to 40 drops a day over a period of from eight or ten days to two or three weeks, when a thyroidectomy is done. After the fifth or sixth day in the majority of patients the metabolic rate drops. There is a corresponding drop in the pulse rate and change in the nervous symptoms and many patients begin to gain weight. Unless patients are very much underweight and have thyroids which appear as though they would be removed with much difficulty, it seems quite safe to perform a primary thyroidectomy with the assurance that there will be little chance of a serious postoperative hyperthyroidism. On the morning of the operation patients are usually

given 40 minims of Lugol's solution in divided doses by mouth and after the operation are given 30 minims of this solution in the first 1,000 c.c. of salt solution given by proctoclysis; 30 or 40 minims are then given each day for several days. By this means of preparation the mortality from thyroidectomy for exophthalmic goiter has been definitely reduced and at the present time is less than 1 per cent.

#### SUMMARY

Clinically we find that practically all goiters may be classified under three types: colloid goiter, adenomatous goiter and exophthalmic goiter. Combinations of these types also occur. Colloid goiter is a goiter of youth, not associated with hyperthyroidism, and often responds to proper treatment by medicine. Adenomatous goiter also usually begins in youth. In younger people it is not found associated with hyperthyroidism. It produces a nodular, irregularly shaped type of goiter and over 20 per cent of the patients later develop a type of hyperthyroidism which differs from that seen in exophthalmic goiter. This type of goiter does not respond to treatment by medicines and should be looked upon as a surgical condition. The most advantageous time for the surgical removal of such goiters is between the ages of 25 and 30. Exophthalmic goiter may occur at any age. It is always associated with hyperthyroidism. It responds best to treatment by operation and the earlier the operation the better the end-result. Iodine used as a means of preparing patients with exophthalmic goiter for operation diminishes very greatly the chances of dangerous postoperative hyperthyroidism.

#### PHYSICAL THERAPY

The Council on Physical Therapy of the American Medical Association publishes a report on the present status of physical therapy. The Council cautions that while there are certain definite indications for the use of some one or a combination of several physical agencies in the treatment of disease, it is harmful practice to depend on these agencies alone, to use them in place of better proved methods, or to employ them without having first thoroughly studied the patient from the standpoint of diagnosis. The Council warns against the indiscriminate use of physical measures and the danger that their use may lead into dishonest practice or quackery. The physical measures that have been found to have certain therapeutic value include: 1. Heat, Natural and Artificial. 2. Hydrotherapy. 3. Light. 4. Electricity. 5. Massage. 6. Therapeutic

Exercises. The Council feels that the following considerations must receive the most careful attention of the medical profession: 1. Physics, physiology and biochemistry must be called on to dispel the empiricism of the past and to prove the value of various physical agencies. 2. Physical therapy must be recognized as a definite part of medicine, practiced and controlled by graduate physicians. 3. Since physical therapy is a definite part of medicine, every medical school should give thorough training in this subject. 4. Persistent, prolonged effort must be made to eradicate the abuses of physical therapy. The Council proposes to point out to the medical profession the advantages and the disadvantages of physical therapy so that its abuses may be reduced to a minimum, and its scientific possibilities may be appreciated. (Jour. A. M. A., Oct. 16, 1926, p. 1302.)

## LOCAL ANESTHESIA IN TOXIC GOITER\*

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*Duluth*

In a little more than three years, the management and cure of exophthalmic patients have been changed from their former uncertain status, to one of such certainty, security and celerity that no surgeon who has many of these cases to care for, can fail to accord the greatest respect thankfulness and admiration to Dr. H. S. Plummer, whose genius and capacity for research then introduced the compound tincture of iodine treatment. Every surgeon must now be cognizant of how tremendous a boon this has been. The number of hospital confinement days alone, consequently saved to these patients, constitute an enormous aggregate economic gain. The routine use of multiple operations, single, double or more preliminary ligations, boiling water injections, partial and repeated lobectomies, can now be almost entirely abandoned. The treatment of impending or present crisis in the more toxic of these patients can now be approached with such confidence, that individuals formerly inoperable and uncontrollable may be operated upon, and a safe convalescence predicted with a great degree of certainty. Extremely high basal metabolic rates can be brought back to a point of safety, for surgical attack, in comparatively short periods of time, and the wasting effect of the insidious disease stopped, largely due to proper preliminary treatment by this system.

However, several years before this remarkably successful regimen was introduced, it was noted by all thoughtful surgeons, that the mortality and morbidity rates in operations upon cases of exophthalmic goiter, were greatly influenced by the technical skill of the operator, and his judgment of the amount of trauma and mental perturbation that his patient might safely endure at his hands, in addition to that of the already existing devastating disease. The methods of approach to the ordeal of operation, as employed by G. W. Crile, proved in good hands, to be a very great gain over any less careful technic, and his mortality rates after operation proved the value of his method. The principles of that day can be summarized briefly in these dicta: The stimulation and irritation of the higher centers by fright,

grief, or pain must be reduced to the lowest possible minimum; the operation must proceed with the greatest speed, gentleness in handling sensitive tissues, and conservation of blood that is possible to achieve, and there must be removal of sufficient of the offending thyroid gland.

These conditions still constitute the main requisites for safe thyroid surgery. Even with the increased safety that the recent treatment with Lugol's solution has given to surgical craft, it is felt by the author that the treatment of this form of disease must still remain other than a casual and unimportant responsibility. Because this method of preparation by iodine gives a wider margin of safety to the patient than has ever been previously secured, does not mean that, in so severe and debilitating a disease, any factor that leads to still greater well-being, shortened convalescence or freedom from danger from any source, can be abandoned without regret.

It must fairly be conceded that, in some degree, all inhalation and general anesthetics produce some untoward results upon even a normal and vigorous organism. It is granted that in some instances these may be minimal, but it is also known that some may be important, and there are occasional variations of activity with the same drug upon various individuals. The safety of the injection of dilute solutions of procaine is almost absolute, so far as general untoward effects upon the average patient are concerned, and local effects of undesirable character can nearly always be obviated by a careful technic and reasonable understanding of anatomic and physiologic conditions. It is not argued that complications, frequent and severe in general anesthesia, cannot occur with local anesthesia; but it is held that these complications are less frequent, and that they are combated by a patient who has been subjected only to a local anesthesia, with greater competence and success, than by one who has been given a general anesthetic.

Somewhat more than two years ago, and after the value of the compound tincture of iodine had already proved itself in the treatment of exophthalmic goiter preliminary to surgical operation, we were much impressed by hearing a great surgeon declare that now any reduction of morbidity would depend upon the skill of the individual surgeon into whose hands the cases might fall, as the other uncertainties of the disease were under such excellent control. It was assumed

\*Read before the annual meeting of the Northern Minnesota Medical Association, Crookston, August 9 and 10, 1926.

then, as now, that by far the most successful and prompt return to health could be secured by surgery. The insistence of Crile that every possible trauma to the patient, either physical or psychic, be avoided or minimized, seemed the best possible solution in the management of these patients, and we began a routine method of operation in which only a local anesthetic was used, except for some degree of morphine and hyoscine narcosis, to control excitation of the higher centers.

At the beginning we were impressed by the writings of several authors upon local anesthesia who insisted that perfect anesthesia could only be secured by a block of the second, third and fourth cervical exits of the nerve supply; but we found this clumsy and awkward, as well as disturbing to the aseptic draping arrangements about the field of operation, and later came to the use of infiltration only, proceeding carefully and quickly through the front planes until the surface of the gland was exposed, then infiltrating the loose connective tissue at the side and behind the lobes, seizing and raising them so that any necessary advancement of the edematized field could be easily made without pain. This can be done with a short needle without the slightest danger of injury to important adjacent structures. In the whole series no such injury has occurred, and anesthesia has been entirely satisfactory. The solution used is one-half of one per cent procaine, in normal salt solution.

In this period of two years, more than three hundred goiters, mostly of the exophthalmic type, have been operated upon by this method, with no reason to feel that it failed in any instance in satisfactory anesthetic effect or in giving the greatest possible lack in undesirable after-effect to the patients. We have seen no healing failure in the wounds attributable to it, the early taking

of fluid by mouth is assured, and by-effects of the drug have seemed to be entirely negligible.

With regard to time consumed in getting to the actual removal of the gland at operation, it is quite as rapid as with other methods, and there is the additional advantage that is in some cases important: that the infiltration edema produced makes for easy separation of anatomic planes with the greatest precision and minimum of bleeding.

It is not held that many thyroid situations where surgery is indicated can not be satisfactorily managed with inhalation anesthetics. In the severe and questionable cases, however, it is our opinion that local anesthesia will show frequently so decisive a gain over any other type of anesthesia that a distinct advantage over all other methods may be read in the mortality and morbidity records. Also by this mode of management, some extreme cases can be brought to surgery that may be life saving, that by any other method are impossible and not to be considered. So much then is accorded of advantage to these patients.

On the surgeon's side can be credited these values: The anatomic relationships with local anesthesia are accurate and undisturbed, the edematization of the tissues making their dissection and separation quick and easy; the engorgement of the veins, so notable in nitrous oxide and ethylene anesthesia, is not seen. The control of blood loss is very accurate, and the advantage of a shortened operating time is thus secured. If doubt regarding hemostasis is felt, the patient can be called upon to cough or hold the breath, before closure of the deep operative field, to test the accuracy of the ligations. And again test of phonation can be voluntarily employed by the patient during the operative maneuvers, if it is believed that a recurrent laryngeal nerve may be in danger of injury.

#### TOXIVI AND TOXOK NOT ACCEPTABLE FOR N.N.R.

The Council on Pharmacy and Chemistry reports that according to the Cutter Laboratory, Berkeley, Cal., Toxivi is stated to be an extract of *Rhus toxicodendron* for use in the prophylactic and therapeutic treatment of dermatitis caused by poison ivy. Similarly, Toxok is claimed to be an extract of *Rhus diversiloba*

for use in prophylactic and therapeutic treatment of dermatitis caused by poison oak. The Council found Toxivi and Toxok unacceptable for New and Non-official Remedies, because the statement of their composition and strength is indefinite; because the claims advanced for them are not warranted, and because they are unoriginal preparations marketed under proprietary nondescriptive names. (Jour. A. M. A., Oct. 16, 1926, p. 1321.)



THE NEUROLOGICAL ASPECTS OF  
CHOREA GRAVIDARUM\*

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Chorea gravidarum may be considered as either a counterpart or a recurrence of chorea minor. The purpose of this paper is to call attention to the inadequacy of the so called rheumatic or toxic theory in explaining the production of all cases of chorea gravidarum and to emphasize certain aspects of the disease which stamp some cases as functional in character.

It should be understood that there is wide variation in the severity of choreiform movements. In general the milder choreas occurring in the course of pregnancy have little significance and are readily amenable to treatment while the more severe movements which rapidly exhaust the vitality of the patient offer a serious menace to the life of the mother and child.

Mild chorea is not infrequently encountered in obstetrical practice, but chorea gravis gravidarum is exceedingly rare. Meulbaum reported sixty-five cases of chorea in persons between sixteen and thirty years of age, and of these 27.7 per cent suffered from the chorea of pregnancy. Kleist from the neurologic clinic at Halle reported 155 cases of chorea in both men and women, and of the 155, thirty-nine or 25 per cent had chorea gravidarum. French and Hicks collected 29 cases from the records of Guy's Hospital in the thirty years preceding their report. Whitridge Williams encountered only one case of the grave type in his obstetrical experience.

Young women in their first pregnancy seem to be predisposed. The usual age of onset is about twenty years and it is very unusual for it to appear after thirty years. Shiell reports 60 per cent of his cases in the first pregnancy and of Buist's cases 59 per cent were in primiparae.

In the majority of cases the movements begin in the first months of pregnancy. Compiling forty-nine cases from seven different sources, nineteen or 39 per cent occurred in the first trimester, nineteen or 39 per cent occurred in the second trimester and eleven or 22 per cent

in the last three months. Buist, reporting on 203 collected cases, found 108 occurred in the first three months, seventy during the second three months, twenty-five in the third trimester and sixteen after labor. His figures give the further information that in 214 cases reviewed, 273 attacks were observed. In eleven of them insanity was present; in seven of them the chorea became chronic; sixty of them recovered from the disease before the onset of labor; and ninety recovered after labor. French and Hicks report four recurrences in twenty-nine cases.

In many cases the history of a chorea in childhood is obtainable. Pinard states that seven of the eight cases occurring in his practice had had chorea minor. Buist's 226 cases gave a similar history in sixty-six instances. Charpentier records that 20 or 22 per cent of ninety-six cases had it earlier in life. Wall and Andrews report it in sixteen out of thirty-seven cases.

Chorea and rheumatism occurred in nineteen out of twenty-nine cases reported by French and Hicks. Buist reports acute rheumatism in twenty-five cases and twenty more had both chorea and acute rheumatism in a total of 226 cases. Royston<sup>1</sup> reports an acute arthritis occurring in a nervous manifestation which he believed to be a chorea gravidarum. Shiell tells of a case which suffered from an acute arthritis between pregnancies and in the later pregnancy developed chorea. Duckworth stresses the rheumatic tendencies of varying degrees of severity as being the most likely factor in its production, Mallory, Page, Graves and Birnbaum have demonstrated embolic foci in the region of the thalamus and crux cerebri involving the quadrigeminate, anterolateral and thalamo rubro-spinal tracts, which were thought to be indicative of the rheumatic nature of the disease.

The cause of the disease has been ascribed to a toxemia of uterine origin by Sanger and also by Shaw and by Harding, who base this assertion on the fact that eliminative measures or emptying the uterus favorably influence the disease.

The tendency to abortion is no greater when the patient suffers from chorea than it is in ordinary pregnancy. The normal ratio is quoted as about one abortion in five pregnancies. Barnes' thirty-two cases gave a history of six abortions, or about one to five. Buist's average was below normal. Wall and Andrews' ration was one to

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\*Read before the annual meeting of the Minnesota State Medical Association, Saint Paul, May 17 to 19, 1926.

five. Pinard reports eight healthy children in eight pregnancies with chorea.

The prognosis seems to be a matter of the individual case. A chronic chorea or choreic insanity is rarely encountered in chorea gravidarum. The mortality varies widely from Barnes' 43 per cent to French and Hicks' 10 per cent.

This briefly is the literature on the subject. A critical scrutiny of the case reports discloses the fact that many cases obviously not chorea gravidarum have been included by enthusiastic reporters, and these would influence all of the ratios and statistics quoted. The occurrence of rheumatism in its production is obviously to be discounted, for in many cases the simple term rheumatism is used without specifying an acute arthritis. The outstanding features of the disease then as gleaned from this review are: (1) The relative frequency of an attack of chorea minor preceding the pregnancy; (2) the tendency to recur in succeeding pregnancies; and (3) its predilection for young primiparae in the first few months of pregnancy. Newell states that it is a difficult matter to estimate the influence of rheumatic fever on chorea gravidarum, for the majority of patients who develop this disease give no history of a previous acute rheumatism. He quotes Charcot to the effect that in his opinion chorea is not to be considered as the equivalent in the nervous system of the articular or visceral changes of rheumatism. Newell further states that the general opinion in England at the time he was writing (about 1901) was that chorea gravidarum was a neurosis. This opinion was based by some vague inference on the appearance of chorea minor most frequently about the time of puberty, and of chorea gravidarum in young primiparae during their first pregnancy. However, it is possible to see that with the heightened emotional tone, which occurs in certain individuals at these two periods, nervous shocks or situations to which no individual adjustment can be made might precipitate a neurosis.

#### CASE REPORT

The patient, thirty years old, pregnant three months in her fourth pregnancy, was admitted to Ancker Hospital January 12, 1925. Two paternal uncles were insane. She gave no history of an acute arthritis or previous chorea. On her last admission to the hospital she was delivered at term of a dead baby. Following the stillbirth, her mother noticed a change in her personality. Also, she seemed a little off mentally,

was often preoccupied and forgot things that had happened in her past. At times she would not answer questions and was somewhat irritable, at other times she was too talkative. She expressed to her children the fear that she would go insane.

Shortly after she became pregnant in October she began to be nervous in her actions, tapped her fingers and bit her lips. These mannerisms became increasingly noticeable and finally she became so nervous that she could not do her work. A few days before entering the hospital she had an argument with her husband and following it began to twitch. On entering the hospital her movements were violent. As the house physician, Dr. Davidson, described them, they were those of a "snake dancer" tragically exaggerated. She had difficulty in speaking and swallowing. Neurological examination disclosed a marked loss of muscle tonus, all of the striped muscles being exceedingly flaccid. She assumed the characteristic posture of so many adult chorea patients which put the greatest number of muscles on the stretch; that is, she extended her legs and then bent her body forward so that her head was towards her feet, her trunk and legs, lying almost flat on the bed, forming the two limbs of the letter V. One side of her body did not seem more involved than the other. Her reflexes were all present and she displayed no abnormal ones.

Her emotional state was at times depressed and at other times agitated. On two occasions she voiced ideas of a delusional nature. She said at one time that she thought the redness of her skin from the constant rubbing on the bed clothes was due to syphilis. At another time she refused food because she thought it was poisoned.

Her movements were violent when she entered the hospital and then quieted down somewhat. Two days after entrance, she awakened at 3:30 in the morning and was very noisy and her movements were exceedingly violent. Charcot has called attention to this sudden change in the character of the movements and thought that it was always to be considered of serious prognostic import.

After consultation with Dr. Albert Schulze a therapeutic abortion was decided upon and suggested to the family. They refused it on religious grounds. One week after entrance she aborted spontaneously a three months old macerated fetus but no placenta was found. Two days later she was curetted for placental retention. At no time did she have fever and her leucocytes were always under 10,000. Following the abortion she lost weight rapidly because of the violence of her movements and increasing difficulty in eating and sleeping, even with sedatives. She died on the twelfth day of exhaustion, without any discoverable intercurrent infection.

The salient features of the case are the presence of certain neurotic mental symptoms months before the actual occurrence of the disease; the sudden onset of chorea, following an emotional scene; the abrupt change and exaggeration in the character of the movements which mark the

more serious phase of the disease; the failure of medication and abortion to ward off the fatal outcome.

Histories of such shocks occur often enough so that many writers, including French and Hicks, Newell and Jones, comment on them as being instrumental in many instances in beginning the disease. Actually they may be only a minor sort of a fright such as a rat jumping out of a cupboard. Mosler's case developed after a fall into the water. Hand's patient fell from a ladder. Bamberger's patient waked at night to find the house on fire and was next day seized with violent choreic twitchings. Jaccoud reports a patient who developed violent choreic movements after a family quarrel. Such instances might be enumerated at length. Herman Oppenheim<sup>2</sup> and also Lewandowsky<sup>3</sup> point out that such shocks may be the starting point of a neurosis, even in apparently healthy persons, but Oppenheim believes that far more often the neurosis thus suddenly begun by the shock is the product of a neurotic predisposition generated by an emotional conflict of long standing combined with extreme fatigue or perhaps an infectious disease. Many writers have mentioned that the neurotic predisposition is present in chorea minor, but the literature of chorea gravidarum makes no mention of its presence. However, my records hold a case history of a girl sixteen years old who had been used to satisfy the passion of an older brother. She was unusually innocent and perhaps simple for she seemed to have little knowledge of the consequences of her act. When her mother without knowing what was going on explained the significance of the sexes, the girl began to worry that she might be pregnant, and developed chorea.

Such emotional conflicts occur with great regularity in chorea minor. In fact they occur so frequently that aside from the cases which follow arthritis it is an unusual case which does not give such a history. These conflicts are not necessarily of a sexual nature in chorea minor and what is true of chorea minor may be said to be true of chorea gravidarum, because so many of the cases seem to be a recurrence of a previous chorea in childhood. Viewed in the light of an emotional situation, pregnancy itself is considered by some women as an extremely uncomfortable condition and is not unattended by fear and apprehension, and as such it is interesting

to speculate as to whether or not it might cause a chorea to recur. For even chorea coming on after an acute arthritis may recur without signs of an infection, during an emotional situation. For example a boy fourteen years old had scarlet fever followed by acute arthritis. As he was recovering from the rheumatism he had an attack of chorea which lasted two months. He had his tonsils removed and was free from chorea for four years. He is in the hospital at present with an attack of chorea which he states immediately followed the circumstance that his brother caught him in a shameful act and reprimanded him severely.

In this case as in the others cited it seems obvious that the emotional element looms large in chorea, other than those cases which follow rheumatism. Emotional conflicts are always accompanied by fatigue and muscular tension. These two elements, emotional conflict and fatigue, contribute largely to the tendency or predisposition to develop a neurosis which may be set off by a shock of a minor nature. The symptoms of the neurosis are generally grotesque exaggerations of some habit mannerism which the patient voluntarily resorted to, in the beginning of his conflict, to give expression to the discontent going on within him.

Of the other factors at play in the production of the neurosis, chorea gravidarum, and perhaps contributing to the development of the disease, is the heightened emotionalism at the time of marriage. In this regard it is significant that at least three-fifths of the cases occur in young primiparae in their first pregnancy. Certainly the element of fatigue is not to be disregarded in pregnancy. And along this line attention may be directed to the fact that many women display choreiform twitchings during the course of pregnancy. These twitchings are very annoying to them when they are tired and when there is a necessity to remain quiet in bed. In other words these twitchings occur oftenest when they are especially tired and purposefully try to relax.

The clinicians of Bern, according to Sahli,<sup>4</sup> view these choreiform twitchings as a preformed physiologic mechanism. Sahli calls attention to the fact that before the infant makes voluntary movements its motions are choreiform in character. Remnants of this mechanism survive and may be brought into play in moments of emotional stress, especially in the young. The un-

spoiled child exhibits them when being joked or when caught in a lie. He says further that enforced prolonged muscular relaxation gives rise to a feeling of discomfort in the muscles which is involuntarily relieved by purposeless movements possessing absolutely the character of choreic movements. He believes that these movements are evidently intended (in a teleologic sense) to protect the muscles from any harm that might come to them through too prolonged relaxation. This protective mechanism has a voluntary component, as may be readily seen by the fact that these choreic twitchings relieve this feeling of discomfort in the muscles. These so called physiologic choreic twitchings, he thinks, are most pronounced among highly nervous and excitable persons. He believes that chorea is produced by an abnormal release of impulses, in reality physiologic, and feels that a point of pathologic irritation may set up the necessary abnormal excitation to release these impulses and so he suggests that the remaining peripheral sensory stimuli, no longer actually painful, yet uncomfortable in polyarthritic chorea, may give rise to the sensation of discomfort and thus be the cause of choreic restlessness.

While the theory offers an explanation of the pathogenesis of chorea rheumatica, which disease probably comprises only a minority of actual chorea (according to Abt and Levinson<sup>5</sup> it was found in only a third of their 135 cases) it offers no explanation for the development of those choreas in which no arthritis preceded the chorea. And yet this theory offers some attractive suggestions if they are taken from a slightly different angle. For example, relaxed flaccid musculature is certainly one of the symptoms of chorea, a fact easily proven at least clinically by lifting the patient by the elbows, in which case his shoulders may rise above his ears. In this regard an observation which may be significant in explaining the mechanism by which the movements are kept up may be found in asking the patient to control the movements. They are able to do this momentarily, but almost immediately they experience an extremely uncomfortable sensation in their muscles which involuntarily calls the chorea into play for relief. It has been my observation that the decreased tonicity of the muscles is most marked in the beginning and during the course of the disease until recovery begins, and that with the return of tonicity to

the muscles the movements gradually cease. The relaxation of the musculature would therefore appear to give rise to the uncomfortable muscular sensation which involuntarily calls into play the choreic movements.

While the muscular relaxation and the choreiform twitchings which it calls into play undoubtedly are responsible for the repetition of the movements, we have as yet only touched on the manner in which the mechanism is set off. As has already been said many cases of chorea gravidarum are initiated by shocks, and in the case reported in this paper and in many cases of chorea minor the foundation for the neurosis, chorea, is laid by the presence of an emotional conflict combined with fatigue.

The fatigue syndrome in children has been described by Dr. Lawson Lowry.<sup>6</sup> These children are exceedingly active and alert, nervous in their activity, jumping from one thing to another. They are irritable, fussy, cry without adequate cause, are intolerant of authority and difficult to handle. This syndrome is almost identical in young adults suffering from emotional conflict; in other words the nervous, excitable individual referred to as having a predisposition to a neurosis.

Both children and young adults suffering from fatigue seem to be under great nervous tension. As Sahli pointed out, these people are frequently subject to the physiologic choreic twitchings. The type of child or adult which develops chorea is also important in this conception. They may be described as the nice child or the unspoiled child, which means essentially that they have been disciplined and dominated so that the exuberance natural to childhood and early youth has been toned down and the children have conformed to a certain restrained type of conduct. Such children are never sassy or fresh and never talk back to their elders. When they become fatigued they may be as difficult to handle as any other child, but they never openly rebel and express their resentment in talking back or open refusal to do as they are told. They may feel the hand of authority just as greatly as does any other child but through fear they repress the words and express their distaste in wriggling, squirming motions, when doing what they have been ordered to do.

Two cases illustrative of this are briefly reported.



T. T., aged 15, states that since she was very young she has been in the habit of expressing her feeling of rebellion by writhing movements, not when she was told to do anything, but when she was actually performing the task. The father had dominated the entire family and had been very severe. She developed the chorea following financial losses on the part of her father, which in turn meant a more difficult life for her. That is, she had to work every afternoon and evening in the store and by doing so had increasing difficulty in doing her school work. Her father had moved the family five times during the preceding year because it was cheaper to move than to pay rent. By moving so often she lost her friends and was allowed no time or freedom to make new ones. She was the type of child referred to as nice, and had the peculiar faculty of calling forth your sympathy.

The second case is that of A. N., aged 12, who formed the habit of writhing when ordered to perform a disagreeable task. Her mental age was about eight years and she had not passed the fourth grade in school in two successive years. Her father had been increasingly severe in his criticism and management of her and made her work every night at school work. Often he would stand over her with a stick, using it to urge her to further effort. In the course of this type of treatment she began to twitch, and developed chorea. She gave no history of tonsillitis or rheumatism and had had no infectious diseases in the previous seven years.

The history of expressing a rebellious tendency by writhing, squirming movements is elicited very frequently in those children who develop chorea without a preceding arthritis. It is such habits formed under the influence of emotion, to give expression to emotional conflict to elicit sympathy or perhaps exaggerate certain oddities in the mental make up of the individual, which Freud believes are the elements upon which the symptoms of a neurosis are built. He states that at first the patient resorts to such mannerisms wilfully. The conflicting emotions are usually behind their production but the neurosis is not as yet actually present and such habit mannerisms may be indulged in for years without detriment to the individual. However, under the influence of heightened emotions, fatigue or additional stress or worry, some sudden though slight shock occurs and the neurosis develops. Freud stresses the element of surprise in fright as the important factor, for he believes that the fright alone is capable of breaking down certain defenses and calling into play those modes of expressing emo-

tion to which the individual has habitually resorted. These habits may then become the symptoms of a neurosis.

The production of the neurosis, chorea, takes place in the following manner. An individual who is disciplined too severely may show his resentment of authority by squirming or wiggling movements, when ordered to do an act which is distasteful. This mannerism may be repeated over and over, thus forming the habit of expressing emotional conflict in an unusual way. This does not mean that he must necessarily develop chorea, but if he is subjected to too severe disciplinary measures and in addition has other emotional conflicts combined with fatigue, thus laying the foundation for the so-called neurotic predisposition, a slight shock may break down the defenses of the individual and the neurosis may supervene. The symptoms of the neurosis are always a grotesque exaggeration of certain manner of acting which the person wilfully resorted to in the beginning and which the shock causes to become automatic. In the case of chorea the wiggings become purposeless twitching movements, dependent upon the feeling of discomfort experienced in muscles which are too completely relaxed and which are relieved by the choreic movements.

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## WHAT IS CHRONIC CONSTIPATION? SOME COMMON FALLACIES IN ITS DIAGNOSIS AND MANAGEMENT\*

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The purpose of this discussion is to define if possible the limitations of the term "constipation" and to discuss some of the more common fallacies in arriving at an accurate diagnosis and treatment.

The word "constipation" is defined as "a state of the bowels in which the evacuations are infrequent and difficult, or the intestines become filled with hardened feces" (Webster). According to this definition many conditions may be included under the term, which are very often due to entirely different anatomical, physiological or pathological states; the word really is not diagnostic of the intestinal condition present any more than "rheumatism" is descriptive of the cause or findings of conditions designated as "rheumatic."

Certain fundamental physiological properties of the gastrointestinal tract must be remembered in order to intelligently recognize and interpret the various symptoms and findings attributed to constipation.

The intestinal tract is a hollow tube made up of non-striated muscle, which has the same fundamental characteristics as all involuntary muscle. These properties may be summarized as follows:<sup>1,2,3</sup>

1. Involuntary or non-striated muscle contracts more sluggishly than striated muscle, the rate of contraction is slower, the refractory period longer, and after excessive stimulation the muscle may pass into long periods of fatigue. After prolonged rest it seems to become hyper-irritable and responds to slight stimuli by powerful contraction.

This property is important in explaining the massive peristalsis of the colon which usually occurs three to five times per day—upon arising in the morning and after the taking of food.

2. Transmission of stimuli extends from fibre to fibre in smooth muscle.

This fundamental property makes it unnecessary to assume any elaborate conductive mechanism, other than a regulatory one.

3. Smooth non-striated muscle can maintain a lasting contraction.

This physiological property at least partially explains the tendency to persistent spastic conditions of the colon.

4. Muscle tonicity is a fundamental property of non-striated muscle. It may be influenced by various extrinsic (nervous) factors.

5. Smooth muscle in hollow organs responds to tension by contraction.

The intestine has the power to contract in all states of tonicity, whether the calibre is large or small. In hypertonic conditions contraction may occur upon slight distension, while in atonic states the bowel may have an enormous content before contraction occurs.

6. Smooth muscle becomes shortened upon direct irritation (chemicals, etc.).

7. The tendency to rhythmic contraction is a primary function.

These fundamental physiological properties show some variations in degree because of physiological and anatomical requirements. Alvarez<sup>4</sup> has offered evidence to show that considerable difference exists in the quantitative reactions of



Fig. 1. Constipated stool with normal diet.

the different parts of the intestinal tract, and has advanced his well-known "gradient theory." The rate of rhythmic contraction in the duodenum is 20 per minute, and the lower ileum 10 per minute; but an excised segment from the colon is "slow to start beating, its rate is slow, it tends to contract down into a hard knot and stay that way, and the gradient is poor and often reversed." Besides gradients of rhythm the same author believes there are gradients of tonus, or irritability, and of anatomical structure of the muscular and vascular supply of the gastrointestinal tube. He likens the response of any part of the gastrointestinal tract to stimuli, to ripples from a stone thrown in a flowing stream

\*Read in part before the Hennepin County Medical Society, March, 1926, and Lymanhurst Hospital Staff, Minneapolis, June, 1926.

of water. Ripples extend in all directions but reach a much shorter distance up stream because of a downward "gradient," the current.

Although the "gradient theory" is attractive and serves to emphasize the physiological qualities inherent in non-striated muscle, it is difficult to explain all of the properties of intestinal motility without attributing some very important function to the elaborate intestinal nervous system. The older theory of Bayliss and Starling's "Law of the Intestine," or Cannon's "Myenteric Reflex," probably over-stressed the importance of the nervous influences.

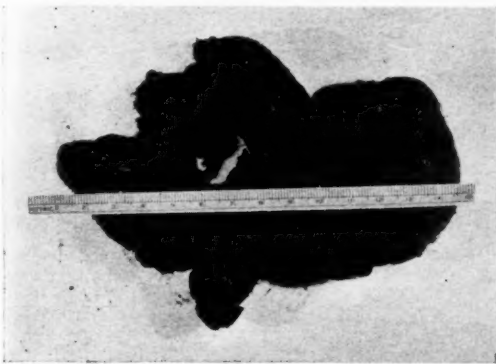


Fig. 2. Normal stool with patient on concentrated diet.

All of these primary muscular qualities are influenced by many extrinsic factors, of which the nervous are most important. Increased vagus action has a tendency to increase tonicity, peristalsis, and the flow of secretions, while sympathetic stimulation has an opposite effect. Recent physiological investigations,<sup>5</sup> however, would indicate that the vagi and sympathetics are both mixed and therefore the effect of stimulation or inhibition is variable. Division of the extrinsic nerves is followed by recovery of the intestinal function, in much the same way as the heart has been shown to be autonomic.

Keith<sup>9</sup> believes that intestinal muscle has an anatomical resemblance to cardiac muscle, in that there is a gradual structural gradation from muscular tissue on the one hand to the nervous tissue of Auerbach's plexus on the other. At certain areas this myoneural tissue seems to be especially abundant, resembling the regulatory nodes of the heart. No doubt this intrinsic neuromuscular mechanism has a very important *regulatory function*, responding to peripheral and

central stimuli, as well as possible excitatory and depressive substances in the blood stream.

The sensations of the patient in abnormal intestinal states are simply the variations of normal physiological reaction. A summary of these sensations is as follows:<sup>7,8</sup>

1. The mucous membrane as far down as the anal canal is insensitive to tactile and thermal sensation, or to irritants.

2. The sensation of fullness is due to a *slow* increase in tension upon the muscular coat.

The volume of intestinal contents necessary to produce this sensation depends upon the tonic



Fig. 3. Normal stool with patient on coarse diet. Notice the food residue.

state of the muscle fibres. *A sensation of fullness in the rectum causes the call for defecation.*

3. The only immediate cause of true visceral pain is a *sudden* tension exerted upon the muscular coats. Other types of pain may arise from peritoneal irritation, from which it may be referred to the skin, muscles, or connective tissue of the same segmental distribution.

4. Tenderness may be reflex with a segmental distribution, independent of peritoneal irritation or due to tension on the intestinal musculature by external pressure (palpation).

5. Visceral sensibility is increased when there is a hypersensitive central nervous system (neurasthenia).

#### COLONIC FUNCTION

The colon may be considered anatomically and physiologically as two different organs. The proximal colon is essentially an organ of absorption and the distal colon including the rectum an organ of storage and elimination. A barium meal is normally passed within 48 to 60 hours, but the variation is great in different or even

the same individuals. There is abundant evidence<sup>9</sup> to show that some food residues may remain as long as one week in perfectly normal healthy adults who have apparently normal bowel function.

"After all of the soluble material and most of the water have been absorbed from the intestinal contents, they are carried from the cecum and ascending colon by the mass peristalsis to the pelvic colon, where they remain until the first peristaltic wave of the following



Fig. 4. Spastic stool. Occurs in cases with spastic descending colon; or the stool may be in the shape of a pencil.

morning occurs either as a result of the stimulus of getting up and dressing, or of breakfast. They are then carried into the previously empty rectum, where they give rise to the desire to defecate, which is followed by the normal reflex process of defecation. Consequently during the greater part of the day the cecum, ascending colon and pelvic colon are more or less full, but the rest of the colon is generally empty" (Hurst, 1922).

The movements of the colon are the resultant of the downward force of peristalsis and the resistance to that force offered by circular muscle tonus. Either or both may be increased or diminished; the symptoms will depend upon the resultant. Reverse peristalsis may occur under certain conditions, due to the peculiar properties of non-striated muscle (possible reversal of the "gradient").

A large percentage of the chronic dyspepsias and of chronic abdominal pain is due to motor difficulties of the bowel, especially the colon. The following is a somewhat unsatisfactory, but a workable, classification of the disturbances of colonic motor function:

A. *Organic Obstruction.* Mechanical interference with peristalsis:

1. Tumors, adhesions, strangulation, etc.
2. Developmental membranes and anomalies. (Very rarely obstruction).

B. *"Functional."*

1. Increased activity:
  - a. Diarrhea (muscular balance in favor of peristalsis).

b. Hypertonic colon ("spastic or hyperkinetic<sup>10</sup> constipation").

Muscular balance in favor of resistance of circular muscle tonus.

2. Decreased activity:

a. Atonic constipation ("hypokinetic<sup>10</sup> constipation").

1. Congenital. (Hirschsprung's disease).
2. Acquired.

b. Rectal constipation, or dyschezia.

3. Mixed types ("dyskinetic<sup>10</sup> constipation").

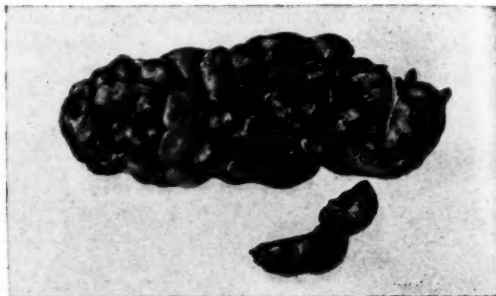


Fig. 5. Baled-hay stool. This stool is formed by a compression in the rectum of spastic balls coming from the distal colon.

(For example, rectal constipation may occur as associated with other colonic dysfunction; or proximal colonic dilation and atony may follow spastic conditions of the lower colon).

Many patients think themselves constipated because they see food remnants in the stools more than twenty-four hours after ingestion, and some seem to believe that any formed stool is "constipated." A cathartic or an excessively coarse diet is taken to "empty the bowel"; subsequently, the patient believes himself constipated because he does not have a bulky stool within the next 48 hours, or the sensation of fullness which follows is interpreted as an overloaded bowel. He therefore does not "allow" himself to go over twenty-four hours without a stool, and in time a vicious cycle is established. His treatment causes an overacting bowel and an insufficient bowel content, resulting usually in a hypermotility of the intestinal tract. The bowel content reaches the empty distal colon, which is now in an almost habitually overcontracted or hypertonic state, according to the physiological properties of non-striated muscle, and due to its daily almost complete evacuation by the treatment. Depending upon the balance between the peristalsis and increased tonicity the patient passes mushy or various types of spastic stools; the latter is nearly always interpreted



as "constipated," and the former as "normal." With both types of stools we have an overactive bowel. (By the term "overactive" is meant that the musculature, either the longitudinal or, more often, the more powerful circular coat, is showing increased tonus or contraction.) This increased irritability is the cause of many of the symptoms, especially the so-called "gas pains" described by the patient. These patients may in an early stage be completely relieved by a little education and the prescription of an average common sense diet without fads, because no abnormality exists except as has been produced by the treatment. Many chronic intestinal invalids are being produced because of an incorrect knowledge of hygiene on the part of the patient, and because he is hoping to prevent disease by taking good care of himself. Such cases are sometimes the victim of the physician's carelessness and poor advice; we should always hesitate before prescribing indiscriminately the use of laxatives, mineral oil, bran or an excessively coarse diet.

in this paper. There are acquired *atonic colons*, uniformly dilated throughout, where the patient first consults the physician in adult life and gives no history suggesting the congenital condition. These patients have very few symptoms, except mechanical ones due to the weight of the stool and to mechanical irritation from passing enormously sized hard formed stools. Fecal impaction may occur later with the symptoms of colonic obstruction similar to those found in malignancy or other organic obstruction. These patients usually do not have symptoms of so-called "autointoxication." Some atonic colons possibly are the final dilated stage of the spastic type or are due to the results of taking very large daily enemas.

The atonic colon cases suffer from a true constipation, may go for many days without defecation, and the colon become so dilated and the musculature so thinned out, that probably, in some cases, it can never recover its tonicity. The atonic colon is frequent in senile patients or in cachectic states.



Fig. 6. Small, loosely formed stool. Acid in reaction, and containing large quantities of undigested starch.

Briefly the cases of disturbed colonic function included under "constipation" may be divided into those with an atonic bowel or those with a spastic one. Occasionally there is a combination of spasticity and loss of tone—the "mixed" type.

#### THE ATONIC GROUP

The congenital megalocolon of Hirschsprung is a clinical entity which will not be discussed

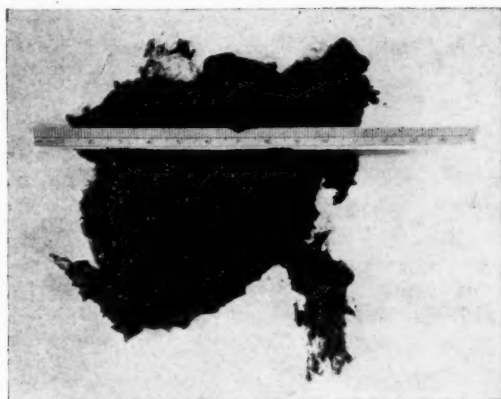


Fig. 7. Mushy stool.

*Rectal dilatation* may occur with a normal or spastic colon and is usually due to rectal impaction, enema habit or some spinal cord lesion; in each case due to the absence of the normal rectal defecation reflex. In others the normal rectal defecation reflex may be decreased or absent. Rectal dilatation is common in women when the recto-vaginal wall has been weakened by childbirth or it may be secondary to diseases about the anus with sphincter spasm.

THE "SPASTIC" GROUP (OVERACTIVE COLON,  
IRRITABLE COLON\*)

By far the majority of patients whose complaint is "constipation" have a spastic condition of at least a part of the distal or excretory position of the colon (i.e., part distal to the mid-transverse colon). The rest of the intestine, both large and small, attempts to compensate by an increased peristalsis, in much the same way that the stomach attempts to compensate for a pyloric obstruction or the heart for a valvular difficulty. Many of these cases show intestinal hypermotility of a barium meal until the distal colon is reached, where a mechanical functional obstruction is met. The proximal colon first attempts to compensate, but fails because of its poor musculature (in a way analogous to a failing auricle of the heart), and secondarily dilates. This explains probably why the ascending colon is found so frequently dilated in these cases, and as it becomes more and more atonic requires a greater stimulus to obtain contraction. Later in the process of attempted compensation we see the terminal ileum dilated, often resulting in a marked ileac stasis.

The limits of this paper will not permit a discussion of the etiology of the spastic colon except that in general it may be due to:

1. Influences in the bowel itself, as too rough or irritating a diet, or some bowel disease. It may more rarely occur where an insufficient quantity of food and fluids are taken by the patient and the bowel contracts on its content.
2. Secondary to nervous influences, as in neurasthenia.
3. Secondary to general body disease, or
4. Secondary to other intra-abdominal or pelvic disease.

Every case should be exhaustively studied for chronic cholecystitis, recurrent subacute appendicitis, etc., which so frequently cause bowel irritation.

The diagnosis of an "irritable or overactive" colon is made by the history, the physical findings, character of the stools and the roentgen ray; all are characterized by their variability, but may be roughly grouped as follows:

1. Those from the colon.
  - a. *Pain* is variable, it may be below the navel, or related to fixed parts of the colon such

as the flexures, cecum or sigmoid. *No rigidity of the abdominal wall accompanies it.*

- b. *Tenderness* upon palpitation over the colon. This sensation is due to an increased tension of the colonic wall which is produced by the palpating hand.

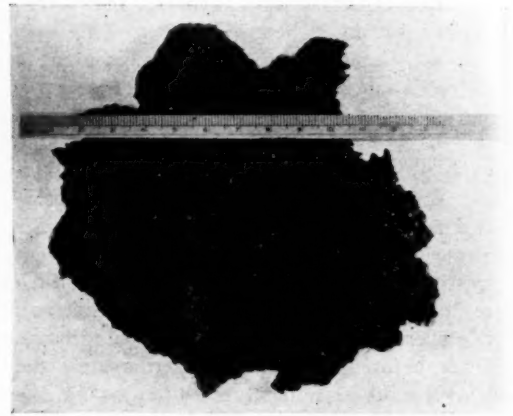


Fig. 8. Mushy, fermentative stool, containing numerous gas bubbles and strongly acid in reaction to litmus.

- c. *Gas.* The complaint of "gas" is caused by a sense of pressure experienced by the patient due to irregular peristalsis and intestinal muscle tension. Gas may become trapped between spastic segments, especially near the splenic flexure. The quantity of gas is not increased except when there is fermentation, or when the patients are "air swallows," conditions which are not so common.

- d. *Abnormal defecation sensations.* Very often there is a frequent desire to make stool, or after defecation there is still the sensation of not having emptied the rectum. This sensation is much the same as one would have after a diarrhea, but since the stools are not liquid, but may be spastic balls, is interpreted by the patient as "constipation."

- e. *Palpable "ropy" distal colon* and very often a large boggy ascending colon. This sensation of bogginess is sometimes mistaken for abdominal muscle rigidity by the physician.

- f. *Abnormalities of motility and secretion, and their effect upon the stools.* An increase of mucus is commonly present in the stools. The stools may be in the form of balls, finger-like, or mushy, depending upon the balance between peristalsis and muscular resistance. It is, at the most, only occasionally that the patient passes

\*The term "irritable" was originally used by Dr. B. W. Sippy. See a good review by P. H. Rowe; *Journal-Lancet* 42: 557-561, Nov. 15, 1925.

cylindrical, well formed, normal stools. Periods of spasticity, diarrhea or alternation of diarrhea and spasticity may occur. On the other hand there may always be diarrhea or spasticity without variation.

2. *Referred pain and tenderness.* This has a segmental distribution similar to any other abdominal lesion.

3. *Reflex symptoms to other parts of the intestinal canal,* causing abnormalities of secretion, motility and tonicity (cardiospasm, pylorospasm, anal spasm, belching, nausea, vomiting, etc.).

4. *Reflex upon the central nervous system* (tachycardia, faintness, etc.).

5. *Symptoms due to toxemia.* The symptoms ascribed to "autointoxication," depending upon absorption of noxious substances from the intestinal tract, have been overstressed, so much so that both laymen and physicians have been led astray. The importance of intestinal poisoning as a cause of ill-health and disease must not be overlooked, but too frequently it has been a blind to cover up medical ignorance.

before arising, when the preceding day's food reaches the distal colon.

#### THE MIXED TYPES

Various combinations of spasm and atonicity may appear. The most common is the association of rectal dilatation with a spastic descending colon and sigmoid. These patients have a difficulty in emptying the rectum or have no stimulus calling for defecation. Very frequently hemorrhoids, anal fissure and anal spasm are present, and the rectal dilation may be secondary to impacted feces or due to habitual use of enemas. The diagnosis is best made by a digital rectal examination to see if the rectum is empty when it should be. Very often we find the "baled hay" stool present, which is due to a spastic stool being compressed into a lobulated mass.

#### TREATMENT OF CHRONIC CONSTIPATION

1. *Prevention.*—Too much uncertain advice and meddlesome treatment has been given without due consideration of the fundamental physiological properties of gastrointestinal motility.

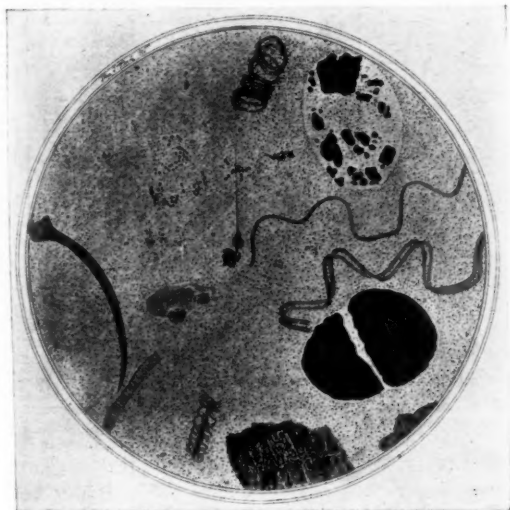


Fig. 9. Complete drawing of an emulsion of stool, stained with Lugol's solution. Notice starch granules in various stages of digestion, vegetable fibers and numerous clostridia—cocci-like organisms.

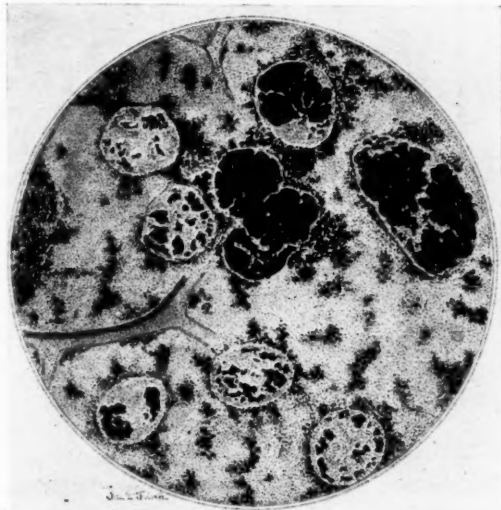


Fig. 10. Starch granules in stool stained with Lugol's solution.

All of the above symptoms and findings may be related to the taking of food, act of defecation, or nervous state of the patient. Anything which inhibits or excites peristalsis affects the symptoms. Sometimes most of the symptoms appear early in the morning, two to four hours

The following are important hygienic directions which should be emphasized.

- a. Drink plenty of water. This should be sufficient, but not necessarily excessive. Water starvation will cause dryness of the stools.
- b. Take some daily exercise.
- c. Practice nervous relaxation.

d. Go regularly to stool each morning preferably just after breakfast, if the inclination is not present before that time. This is the time when massive colonic peristalsis is naturally most active.

The diet should contain sufficient calcium. The bowel may possibly withdraw lime salts from the body at the expense of the tissues, unless sufficient lime is present in the food. In animals\* at least it has been shown that probably

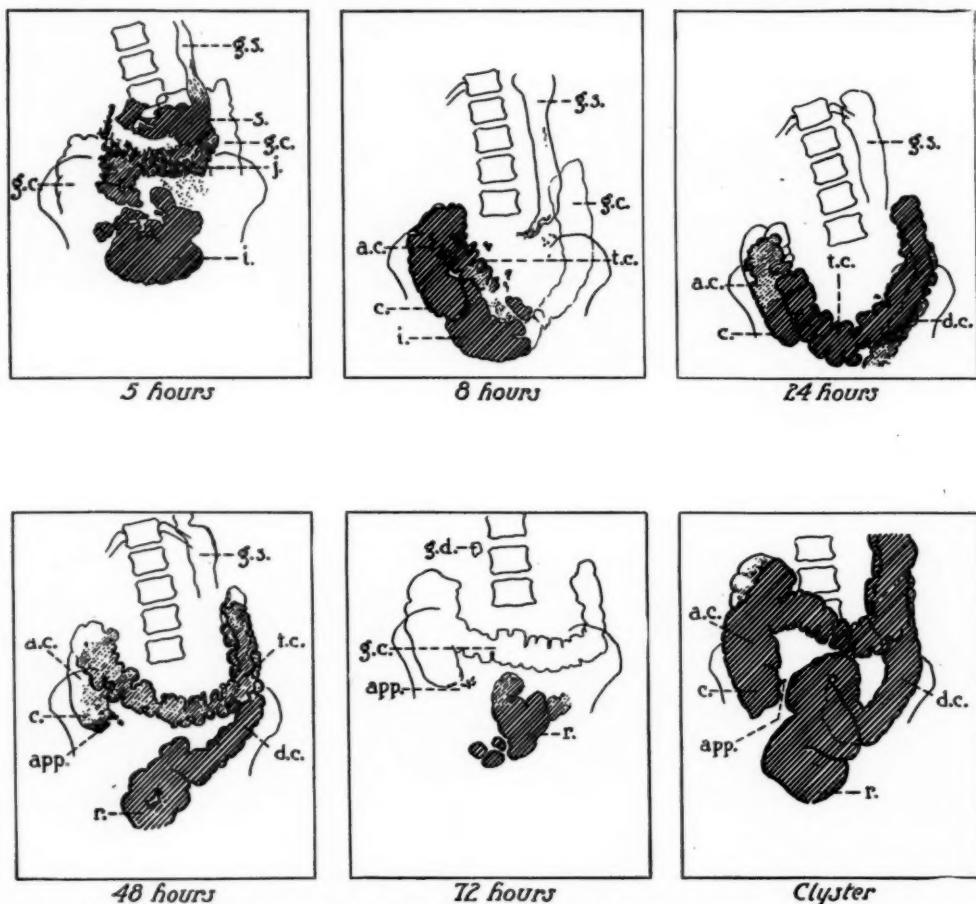


Fig. 11. Case 1. gs- gas in stomach; s- stomach; j- jejunum; i- ileum; c- cecum; ac- ascending colon; tc- transverse colon; dc- descending colon; r- rectum; gs- gas in colon; app- appendix. The findings in this case show only a moderate ptosis and ileac stasis. The semi-invalidism had been initiated and continued by the treatment of mis-interpreted symptoms.

e. Take a plain balanced diet. Foods with bulk should be taken only in an amount which is consistent with having usually a normally formed stool and no bowel distress.

Due consideration must always be taken of the physiological variations of the type of stools, but in the main the normal individual will pass formed stools, cylindrical in shape. Some apparently normal people, who regularly pass mushy or spastic stools, sooner or later are likely to have symptoms of a chronic dyspepsia, especially if proper control is not instituted.

serious lime deficiency may be produced by catharsis or too coarse a diet. Milk is our best lime-containing food.

2. *The Atonic Colon.*—The purpose of treatment in an atonic colon is to stimulate peristalsis and regain tonicity without at the same time overloading the bowel. Cathartics are most frequently of value in these cases, but as a rule a moderately "rough" (but non-irritating) diet is to be preferred, aided by the use of rather large (250 c.c.) warm cottonseed oil retention enemas. The treatment must be adjusted to suit each



case. General treatment of the patient is necessary if any debility exists. Thyroid extract in small doses, but not enough to produce toxic symptoms, will give relief in a few cases, especially in those with subnormal metabolic rates. No routine management can be outlined, because so much depends upon the possibility of the

Less than ten per cent of the cases complaining of "constipation" will show a rectum containing a large cylindrical stool, or a "baled hay" stool made up of small balls compressed into a mass of variable size, depending upon the spasticity of the colon above the rectum, and the size of the rectum itself. The treatment to be instituted is

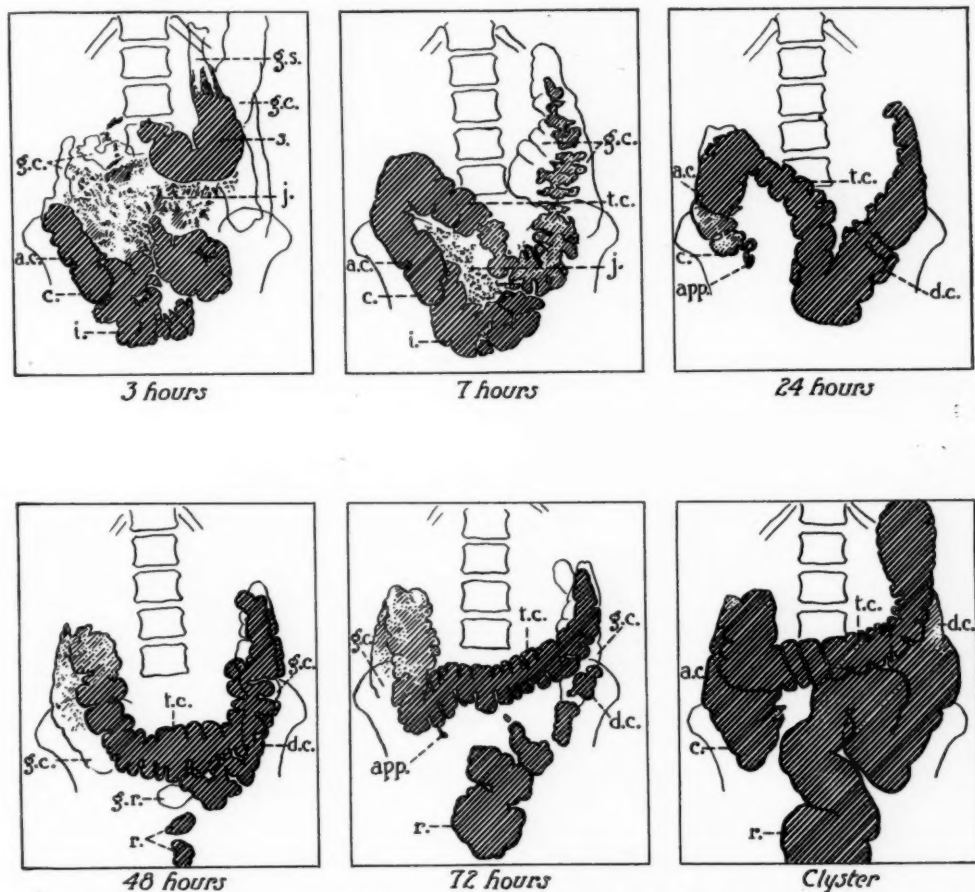


Fig. 12. Case 3. s. stomach; gs. gas in stomach; gc. gas in colon; j. jejunum; i. ileum; c. cecum; ac. ascending colon; t.c. transverse colon; app. appendix; dc. descending colon; r. rectum; gr. gas in rectum. This illustrates the findings in a case of true constipation, in which there is slow motility throughout, especially in the colon and rectum. Although the barium has reached the transverse colon in seven hours, it has not reached the rectum in twenty-four hours, and very little in forty-eight hours. No bowel movements had taken place. The clyster showed a very large, poorly haustrated distal colon, which evacuated very poorly.

bowel regaining its tonicity and the relation of this tonicity to peristalsis. A regime, frequently changed, must be prescribed in each individual case.

Rectal constipation is more uncommon than has usually been stated. Repeated digital or proctoscopic examinations of cases of "constipation" usually show the rectum to be empty.

variable, whether it be the retraining of the defecation reflex, relaxation of a spastic colon, treatment of an atonic colon, or stretching of an anal sphincter spasm associated with or without rectal pathology. Women having a poor recto-vaginal wall from childbirth may have serious rectal constipation, and frequently a chronic bowel dyspepsia is superimposed because of the medical management.

3. *The Spastic Colon*.—A starvation stool is often spastic, and light feeders may have this tendency normally. We must remember the gut always must contract on something, and, to a certain extent, a balance exists between the size of the stool and this tonicity.

In other than starvation cases we are having an *overactive* or an *irritable* large bowel with the rest of the intestinal tract trying to compensate. These cases should be treated just as if they were cases of chronic diarrhea and not as "constipation."

Increased spasm of the distal colon forms an important part of the picture, but increased tonicity may occur anywhere along the gastrointestinal tract ("vagotonic" states). Although increased tonicity or spasm is primarily present, parts of the proximal colon and ileum may become dilated with or without loss of tonicity and decreased peristalsis.

Many of the patients with spastic stools have been given cathartics and coarse foods, and, although temporarily favorable results may be derived, finally pass into a stage of intestinal invalidism. Concentrated non-irritating foods frequently cause sufficient relaxation so that the patient passes through a period of chronic diarrhea because the intestinal muscle balance becomes in favor of peristalsis. These patients should not be regularly given cathartics, bran, or excessively rough or stimulating foods, for by such a treatment the irritability is increased and a vicious cycle is established.

Temporary stimulation for evacuation of the bowels can be obtained by giving 2 to 4 ounces of warm olive or cottonseed oil in the rectum at bedtime, to be retained over night. (See "Care of Bowels in an Irritable Colon.") Mineral oil and bran may give relief for several months, but do not produce normal stools; both, sooner or later, cause irritation in a majority of cases. Calcium salts with or without belladonna may be used in cases either with mushy or spastic stools. The patient should be given instructions about normal physiology and methods of controlling the diet. The following are directions which are given to the patients, modifying them of course to suit the individual case. The carbohydrates are limited where there is fermentation with flatulence and acid stools. (See "Care of Bowel in Fermentative Dyspepsia.")

Some of the patients, especially those with "spastic constipation," have a psychoneurotic

background which contributes an important etiological factor. In such cases, psychoanalysis and psychotherapy are most important in the management. Careless dietetic and hygienic treatment of the neurotic patient exaggerates symptoms, but, at the same time, it must be explained to the patient that his symptoms originally were only the expression of a fatigued or unstable nervous system.

By far the most important part in treatment of these colon cases is attention to detail, especially the diet, as indicated by observation of the stools, either by the patient or physician. These cases tax your patience and resourcefulness, but the results of accurate treatment are gratifyingly good.

#### SUMMARY

1. The term "constipation" is a symptom complex comprising several entirely different disturbances of colonic function.

2. Many patients believe themselves constipated because of their ignorance of normal colonic function.

3. Cases of disturbed colonic function usually called constipation should be treated according to abnormal physiology, determined by a careful history, physical examination, roentgen ray and repeated examination of the stools.

4. The indiscriminate use of cathartics, mineral oil, coarse and irritating foods is producing a large number of patients who are semi-invalids.

5. The cases of bowel disturbances associated with spastic or mushy stools, when recurring in the overactive or spastic colon, should be treated dietetically in the same manner as a chronic diarrhea.

6. The results of treatment based upon sound physiological principles are remarkably good if carried out with accurate detail.

#### INSTRUCTIONS TO PATIENTS

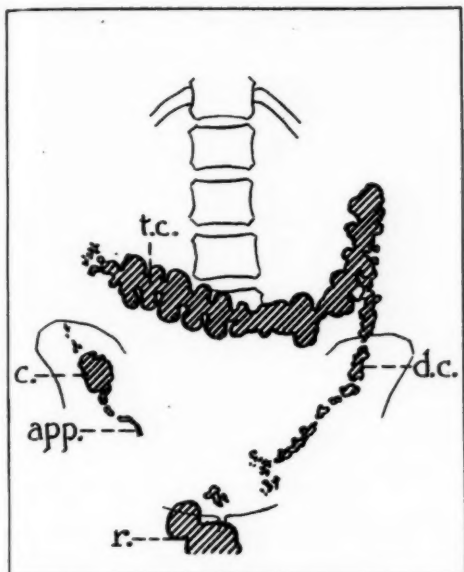
The printed instructions and illustrative diets which are furnished patients suffering from nervous forms of constipation are herewith appended.

#### CARE OF THE BOWELS IN AN IRRITABLE COLON

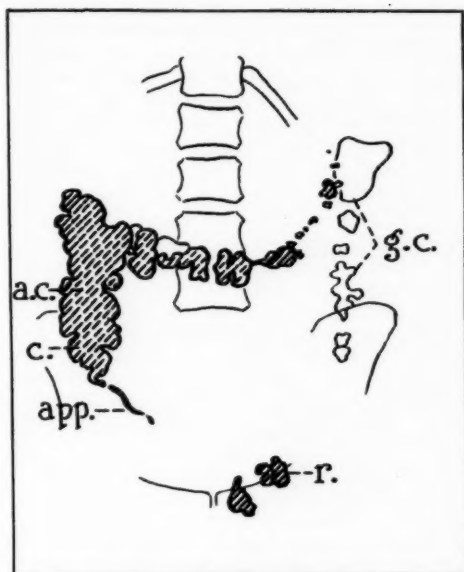
1. A normal stool should be about the size of a twenty-five cent piece, 3 to 5 inches long, and about the consistency of soft putty, or soft moulding clay. There should be one stool per day and never more than two.

2. A constipated stool is one which is a well formed cylinder; as large as, or larger than a normal stool, but has the consistency of dry putty.

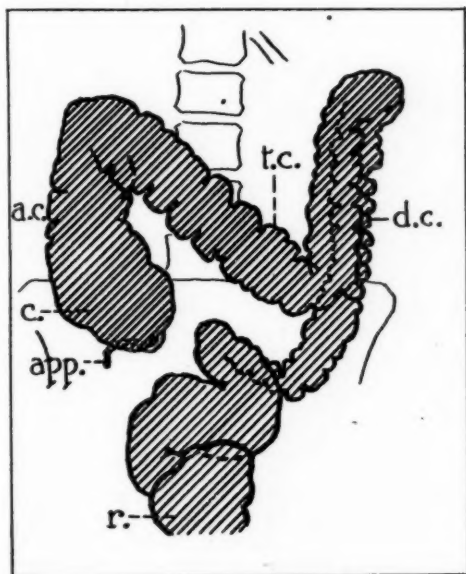
3. A mushy or liquid stool is abnormal.



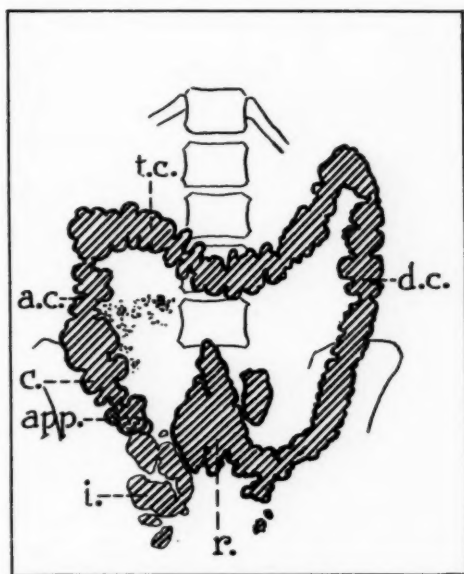
*24 hours*



*48 hours*



*Clyster*



*After evacuation*

Fig. 13. Case 4. App- appendix; c- cecum; t.c- transverse colon; d.c- descending colon; r- rectum; g.c- gas in colon; i- ileum. This case shows especially the marked spasticity of the descending colon with dilatation of the proximal colon. The haustration has a tendency to be irregular in type.

A spastic stool is also an abnormal stool. It may be like small marbles or flat like a ribbon, or small like a pencil. It may be either hard or soft. This indicates that there is a great deal of spasm in the large bowel (the colon). Sometimes these balls may be compressed into a mass like a bale of hay. This means spasm of colon, but, with a large rectum, a condition which commonly follows the enema habit.

A liquid, mushy or spastic stool may be accompanied by a sensation of having not completely emptied the bowel, although nothing is there. This sensation of a "full bowel" however must not be misinterpreted. "Gas pains" may appear with either unformed or spastic stools, which means that the bowel is being irritated and is "working too fast and too hard."

In examining under the x-ray we find in this condition that the food travels too fast. Normally it takes two days or more after a person takes food before it is passed in the stool. When the bowel works too hard nausea is likely to appear.

These abnormal stools may be produced by one of the following conditions:

A. Extreme nervousness and lack of exercise.

B. Over-use of coarse foods and cathartics.

C. Chronic infections; especially from bad teeth, tonsils and sinuses.

D. Occasionally from some other conditions, as gall-bladder disease, appendicitis, pelvic disease, etc.

If this condition in the bowel with spastic or unformed stools persists, inflammation of the lining of the bowel may develop with absorption of poisons into the circulation which may cause many symptoms.

*Note*—Normally the type of stool varies slightly from day to day depending upon diet, exercise, nervous strain, etc., but the person whose stool is usually normal will be free from trouble, while he whose stool is commonly mushy, liquid or spastic is susceptible to many difficulties. (The last one-half of the stool is used as the guide for describing the stool.)

#### TREATMENT OF BOWELS

Large, hard stools (this is the only true constipation) produce no symptoms with the exception of weight and sometimes trouble with the rectum. A person who has such stools may eat almost anything without dyspepsia; he may even take cathartics without harm.

The treatment of bowel trouble with unformed (mushy and liquid) or spastic stools is entirely the opposite to true constipation.

1. Try to obtain nervous relaxation by plenty of rest and recreation. Moderate outdoor exercise is advisable.

2. Do not take cathartics or foods which have an active cathartic action.

3. Diet: When the stools are spastic or unformed, or when you have severe "gas pains," limit your food to the concentrated foods as follows: (The most concentrated foods are named first.)

A. Milk, cream, butter, cheese and eggs.

B. Lean boiled, baked or broiled beef, mutton, lamb, fowl, and fish. Crisp bacon.

C. Moderate amounts of cereals (containing no bran), white potatoes, rice, puree of vegetables and toasted or stale white bread.

D. Whole wheat, rye, or graham breads. Small amount of oatmeal.

E. Spinach, carrots, string beans, green peas, asparagus tips, cauliflower, squash, lettuce and celery.

F. Oranges, grape fruit and sauces (with very little sugar) of peaches, apricots, prunes, pears, strawberries, blueberries and blackberries.

G. Gelatine, custards and junket, cookies, sponge cake, cup cake, or angel cake without frosting and at least two days old.

The above diet is a strict diet and should be adhered to as long as you have symptoms and should be returned to if symptoms reappear at any time. If you continue to have symptoms upon taking all of the above diet limit your food to A, B, C and G (called "bland" diet); if on this very limited diet you continue to have symptoms you should report for further instructions.

Other foods may cautiously be tried, one at a time, but as a whole you should eat the above foods, taking more of the green vegetables and fruit sauces when you are feeling well and more of the bland concentrated foods of A, B, C and G when the stools are not right and you have pain.

In general the following foods except those listed above should be greatly restricted or eliminated from the diet: Tea, coffee, raw vegetables, raw fruits, preserves, jellies, honey, pickles, spices, bran, cereals containing bran, flour containing bran, fresh pastry, hot breads, fried foods, veal, pork with the exception of ham and bacon, fish and nick-nacks. Sugar and sweets should not be used to excess.

#### TEMPORARY RELIEF OF CONSTIPATION

If the bowels do not move for two whole days you may obtain temporary relief by the injection of two ounces of warmed "olive" oil (any oil is satisfactory) and retain if possible over night. If the bowels do not move on the following morning inject not over a half pint of warm water to start them.

In case of emergency and you cannot inject the olive oil you may, only occasionally, take one or two tablespoonfuls of Squibbs liquid petrolatum, or plain petrolagar by mouth. This may also do harm if taken regularly.

You will find that occasionally, even when the diet has not been varied, you will have trouble because of nervous strain, physical fatigue, chilling of the body, etc.

Go to the stool regularly after breakfast each morning regardless of whether you have the inclination or not.

Drink plenty of water. A good habit is to drink about a pint of hot (or cold, not iced) water upon arising in the morning. A good spring water is better if you are having abdominal distress or nausea.

If milk seems to distress you, it may be heated to a steam (not boiled) before using it, or you may use raw "certified milk."



Vegetables such as spinach and carrots may be finely divided by passing through a sieve. They may be seasoned with meat juice, butter or lemon juice. Oil dressings may be used but substitute lemon juice for vinegar and use no spices. Do not "cream" with flour.

Canned fruits and vegetables may be used when the fresh foods cannot be obtained.

been working abnormally so long, due to causes stated above, that it must be "retrained or readjusted" to normal function. The stool is the best and safest guide.

Very often in your condition the rectum has contracted down, because the stools have not been large enough to keep the rectum normal in size. It takes

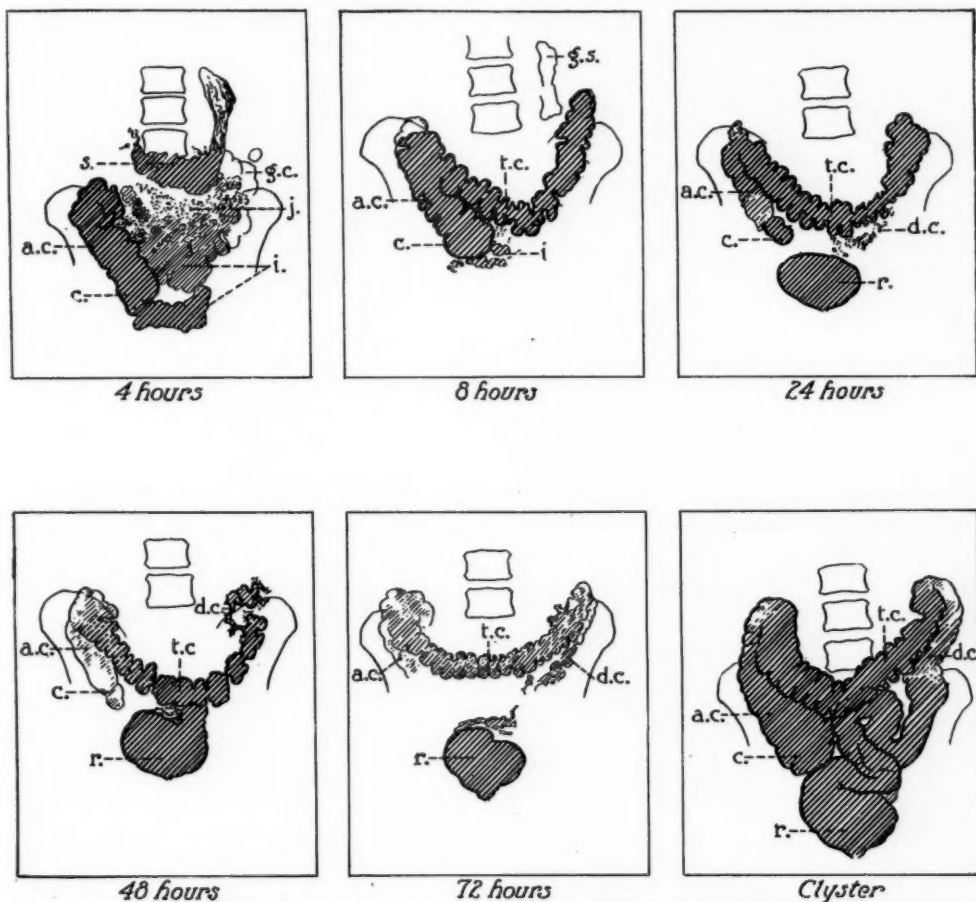


Fig. 14. Case 6. s—stomach; j—jejunum; i—ileum; c—cecum; a.c.—ascending colon; t.c.—transverse colon; d.c.—descending colon; r—rectum. This illustrates a case of rectal constipation. The barium reached the rectum in normal time, but could not be evacuated.

Be careful about using too much bread, potatoes and cereals unless you are taking plenty of exercise. Maintain your weight (unless it is necessary to reduce) by taking plenty of butter and cream, which can be added to your vegetables.

Very often after having symptoms for months or years the nervous system becomes hypersensitive, so that normal stimulation "electrical currents," which are always running from the body to the brain and of which normally we are not conscious, produce distinct disagreeable sensations, which are interpreted as "gas pains," etc., by the patient. In this condition the nervous control of the digestive tract sometimes has

time for it to "accustom itself" and not uncommonly there is some irritation for a time. If the rectum becomes sore or the passing of stools painful, you should inject 2 to 4 ounces of warmed oil just before going to stool. Following defecation, wash external parts thoroughly with warm water, dry, apply plain talcum powder and press in as far as you can with your fingers. If this does not give relief you should immediately report.

The results of treatment depend almost entirely upon how carefully you follow these directions. Improvement is often slow. Your trouble is the result of months or even years of bad habits and ignorance of

what the normal function of the bowel should be, and "bad habits" may require months to correct. Remember that "gas pains" and spastic stools indicate an irritated bowel just the same as if you had a chronic diarrhea. The diet in each is the same.

The above directions aim to bring about normal bowel habits. Take plenty of the green vegetables and fruits listed as long as you are free from abdominal distress and you are usually having a normally formed stool. Some people have digestive tracts so constructed that they can never take large quantities of irritating foods, while others with continuously large constipated stools do better upon a moderately coarse diet.

If in spite of carefully following these directions you continue to have difficulties, report to us, bringing a list of the foods taken at each meal and a record of the stools, including abnormal sensations. Some more obstinate cases require a short period of "education" in the hospital in order to carry out accurate detailed treatment.

When you do not know what to do, report to the office or by telephone for instructions.

#### CARE OF THE BOWELS IN FERMENTATIVE DYSPEPSIA

The cause of fermentation is usually one or more of the following:

- A. Extreme nervousness and lack of exercise.
- B. Overuse of sweets and starches such as preserved fruits, bread, potatoes, rice, etc. Occasionally an excess of milk.
- C. Overuse of coarse foods and cathartics.
- D. Chronic infections; especially from bad teeth, tonsils and sinuses.
- E. Occasionally from some other more rare conditions which in your case have not been found.
- F. Possibly rapid decay of teeth and soreness of gums or lining of the mouth.

The more common symptoms of starch fermentation are as follows:

1. Passage of large quantities of gas by rectum.
2. Belching of gas.

Often mushy stools containing gas bubbles, so that they may float upon the water. The odor is foul and penetrating. The stools may be loosely formed and contain undigested food. Rarely are they spastic or normally formed.

4. Often headache, muscle soreness, and nausea.
5. Irritation about rectum due to the irritation of the acid stools.

If this condition of fermentation persists the lining of the large bowel may become irritated and mucus is passed in the stools, or there may be so much spasm that the stools become small like marbles or pencil-like. At such times there is likely to be bowel pain and signs of intoxication. A cathartic temporarily relieves the intoxication symptoms, but increases the irritation in the bowel and if persisted in may cause ulcerations.

Sometimes there are periods of diarrhea alternating with spastic stools.

#### TREATMENT

1. Try to obtain nervous relaxation by plenty of rest and recreation. Moderate outdoor exercise is advisable and necessary to burn up starches and sweets.
2. Do not take cathartics or foods which have an active cathartic action.
3. Do not take any highly seasoned foods.
4. Diet: When the stools are spastic or unformed, or when you have severe "gas pains," or other fermentative symptoms, limit your food to the foods as follows:

A. Milk, cream, butter, cheese and eggs. Milk should be limited to one pint (2 glasses) per day. This may be whole milk or half and half if you wish to hold your weight. If you wish to reduce, use only the bottom milk, pouring off the top of a one quart bottle. If the milk distresses, you may use raw certified milk and bring the milk to a scald (not boiled).

B. Lean boiled, baked or broiled beef, mutton, lamb, fowl, and fish.

May take ham or bacon for breakfast only. You may use a small serving of meat twice per day. Meat should be tender and thoroughly masticated.

C. Spinach, carrots, string beans, green peas, asparagus tips, cauliflower, squash, lettuce, celery, and ripe tomatoes.

Vegetables such as spinach and carrots may be finely divided by passing through a sieve. They may be seasoned with meat juice, butter or lemon juice. Oil dressings may be used, but substitute lemon juice for vinegar and use no spices. Do not "cream" with flour.

Canned fruits and vegetables may be used when the fresh foods cannot be obtained. Use the small young green peas.

D. Fruits: Sauces (very little sugar) of berries, peaches, apricots, pears, prunes (soak over night and throw away the water before cooking), occasionally baked apple, and citrus fruits if they do not distress.

E. Rye bread, well toasted white bread, and occasionally whole wheat or graham bread.

Do not take more than two slices at a meal. Bread should be at least twenty-four hours old.

F. Gelatine, custards and junket, cookies, sponge cake, cup cakes, or angel cake without frosting and at least two days old.

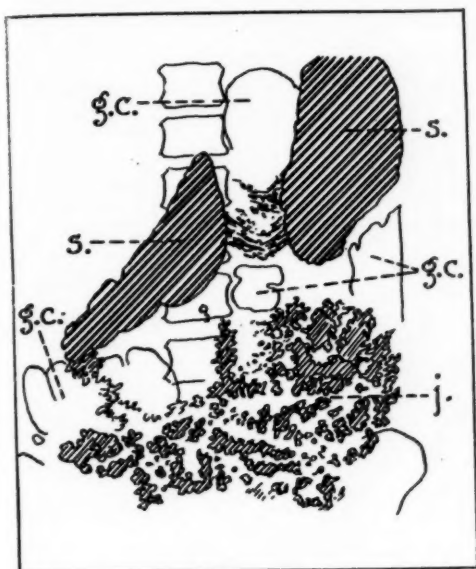
A very small amount of nuts except peanuts.

G. Moderate amounts of cereals (containing no bran), white potatoes, rice, puree of vegetables, and toasted or stale white bread.

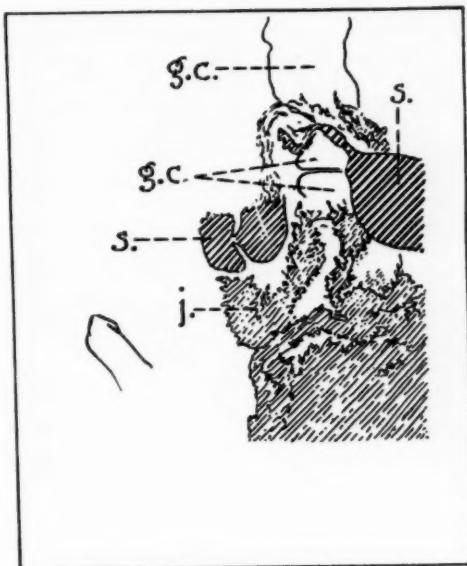
Do not take any of these at any meal when bread is taken.

Limit your diet to the above foods, taking relatively more of "A, B, and C" and less of the "D, E, F, and G." If upon this diet your symptoms do not improve eliminate "G" entirely from the diet and use "saccharin" solution (pinch of saccharin to glass of water) in place of all sugar.

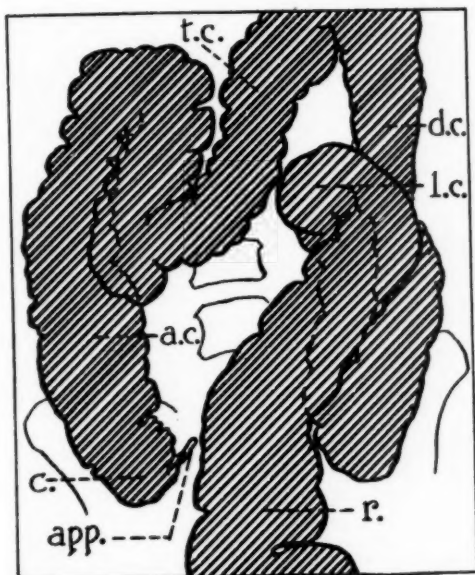
Be sure to report if you continue to have symptoms. It is advisable to bring in a stool occasionally to guide your diet.



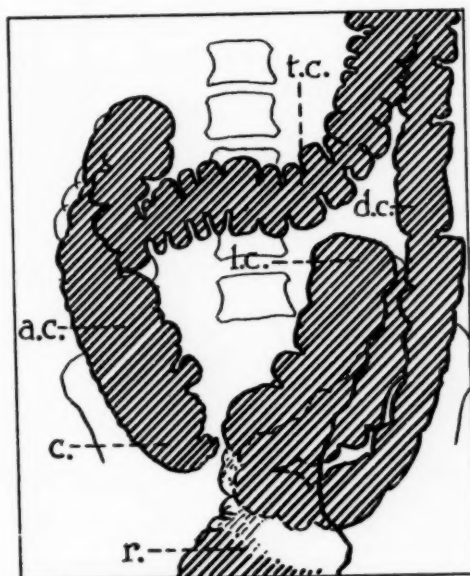
4 hours



4 hours (Oblique)



Clyster



After evacuation

Fig. 15. Case 7. s. stomach; gc. gas in colon; j. jejunum; app. appendix; c. cecum; ac. ascending colon; tc. transverse colon; dc. descending colon; lc. loop of colon; r. rectum. The findings were an apparent hour glass stomach due to pressure from a distended loop of the megalocolon. There was no pathology in the stomach. This patient had no symptoms except pressure in the pelvis, because of the weight from the heavy bowel.

In general the following foods should be greatly restricted or eliminated from the diet: Tea, coffee, raw vegetables, raw fruits, preserves, jellies, honey, pickles, spices, bran, cereals containing bran, flour containing bran, fresh pastry, hot breads, fried foods, veal, pork with the exception of ham and bacon, ices and iced drinks, carbonated water, watermelon, buttermilk, shellfish and nick-nacks. Sugar and sweets should not be used to excess.

## LIMITED CARBOHYDRATE DIET

*Sample Day*

Upon arising drink one pint of hot or cold water.

**BREAKFAST**—1. Large orange,  $\frac{1}{2}$  grapefruit, or berries with cream but little or no sugar.

2. Two eggs.

3. Two thin slices of toast, with butter.

4. One or two glasses milk, or weak coffee (very little or no sugar).

**LUNCH**—1. Soup, if wanted (should not be creamed with flour).

2. Very small amount of lean meat (chicken, fish, mutton, beef).

3. Two green vegetables (spinach, carrots, green peas, string beans, tomatoes, asparagus, lettuce, celery, cauliflower, squash).

4. Two thin slices of bread. Butter.

5. One fruit sauce (very little sugar).

6. Two glasses of milk.

7. Small amount of cheese.

**DINNER**—1. Soup, if wanted. Meat, if wanted.

2. Two green vegetables.

3. You may substitute a very small quantity of potatoes, rice, or macaroni in place of the bread if wanted.

4. Some simple dessert as gelatine, milk and egg puddings, or fruit sauce.

5. Very weak tea if wanted (very little or no sugar).

Choose your foods from the foods listed in "Care of the Bowels in Fermentative Dyspepsia"; the above gives you an idea of food for the day.

Maintain your weight, or increase it, by taking plenty of butter, cream, oils, and bacon.

## LOW CARBOHYDRATE DIET

*Sample Day*

**BREAKFAST**—1. Small orange,  $\frac{1}{2}$  grapefruit, or berries (without sugar, but may have cream). May sweeten with saccharin if wanted.

2. Two eggs. May have bacon if wanted.

3. One thin slice of toast, with butter.

4. One glass of milk, or one cup of weak coffee without sugar.

**LUNCH**—1. Soup, if wanted (should be strained and contain no flour).

2. Small amount of lean meat (chicken, fish, mutton, beef).

3. Two green vegetables (should be seasoned with butter, cream or meat juice and no flour).

4. Two thin slices of bread. Butter.

Preferably use rye bread or crispy toasted white bread.

5. One fruit sauce. (Sweeten with saccharin, no sugar.)

6. One glass of milk. May add cream if you wish to gain weight.

7. Small piece of cheese.

**DINNER**—Same as at noon. You may substitute a simple dessert, as gelatine or milk and egg puddings without sugar.

Do not take cake very often on this very limited diet. Very weak tea without sugar if wanted.

Very occasionally you may take a few nuts, except peanuts.

Sweeten with saccharin. Dissolve a pinch of saccharin in a half glass of water and sweeten with a few drops. Any excess tastes bitter.

Choose your foods from the foods listed in "Care of the Bowels in Fermentative Dyspepsia"; the above gives you an idea of the food for the day.

Maintain your weight by using plenty of fats, such as butter, cream, oils, and bacon.

## ILLUSTRATIVE CASES

*Case 1.*—Female. Age 27. Graduate nurse.

The present complaint was "constipation" of seven or eight years duration, dull pain under right rib margin for several months, loss of weight from 139 pounds to 86 pounds in two years, vertigo, belching of gas, morning headaches, and mental and physical fatigue.

While taking her nurse's training five years ago, she had some indigestion which was attributed to "constipation." Various cathartics, enemas and coarse diets had been tried without any permanent relief. The patient states that she "never allowed herself" to go more than a day without taking a cathartic or enema, if she did not have a "sufficient" bowel movement. The diet recently had included large quantities of fruits, vegetables and bran. The stools, she states, were "normally" soft or unformed. Gradually she had developed dull headaches, especially in the morning, an indefinite shifting right upper abdominal pain and many other symptoms of a vague nature. These were all temporarily relieved by an active cathartic. Her general health had failed. She had been diagnosed as tuberculous and sent to a sanatorium in Colorado. Here she was studied for a prolonged period and discharged as "not tuberculous," but a laparotomy for possible obstruction was advised. She had become discouraged, mentally depressed, irritable and disgusted with medicine in general.

Her previous health had always been good. During childhood she was subject to "nervousness and headaches."

The family history was of no importance, except for a psychoneurotic background.

The physical findings were negative except for extreme malnutrition, moderate visceroptosis, secondary anemia, and a low blood pressure. There was no evidence of tuberculosis by physical findings, chest x-ray films, or tuberculin.

The roentgen examination (Fig. 11) of the stomach showed ptosis, and a slightly delayed emptying time, but nothing else. The terminal ileum was dilated, the proximal colon atonic and the descending colon spastic, after the barium meal. Motility in the terminal colon was delayed. The opaque clyster showed a distensible rapidly filling colon, with poor haustration.



The stools were mushy, or spastic, and contained visible mucus.

The treatment was hospitalization and bowel management, consisting of concentrated foods, heat to the abdomen and no cathartics. Ten grains each of Merck's calcium carbonate and calcium phosphate, and, at first, because of hypermotility of the small bowel,

Case 2.—Female. Married. Aged 43.

The present complaint was burning sensation in the epigastrium, soreness below left shoulder blade, "gas" with belching and rumbling, "weak spells," constipation and cathartic habit.

She had never been strong but had had no serious illness. Has used cathartics for several years since a

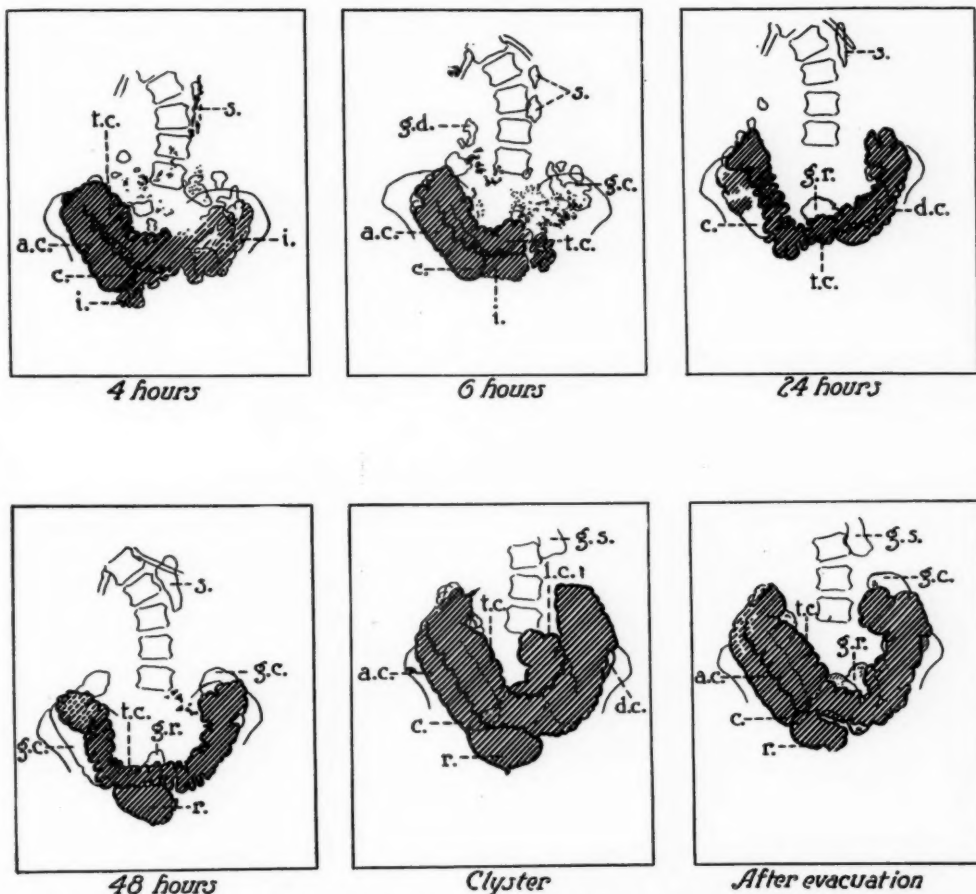


Fig. 16. Case 8. s—stomach; i—ileum; c—cecum; ac—ascending colon; tc—transverse colon; gd—gas in duodenum; gc—gas in colon; lc—loop of colon; gs—gas in stomach. Note the tendency to spasticity; at twenty-four and forty-eight hours. The rectum was widely distensible, probably due to the habit of taking enemas every day. Clinically, this was a "combined" type.

small doses of bismuth were used. The Alpine lamp was also used daily for its tonic effect.

The results of treatment were good. The patient averaged a gain of one-half pound per day. The bowels gradually regained a normal function, although the stools had a tendency to be mushy. The patient was in good condition one year following hospitalization.

Comment: This case illustrates how a vicious cycle in a nearly normal person established a state of chronic invalidism.

"nervous breakdown" just after marriage, fifteen years ago. She has been very nervous for over a year with frequent vague "weak spells," so that part of the time she has been in bed. Palpitation of the heart was very distressing especially at night or after eating. Some slight relief has been obtained by taking quantities of bran and magnesia every other day. Although the stools are soft, there is no satisfaction from defecation. She has lost about twenty pounds in weight.

The examination showed a thin, asthenic, neurotic woman in very poor physical condition, but no evi-

dence of organic disease. There was a slightly enlarged "drop heart" and a general visceroptosis.

The *roentgen examination* showed only a spastic distal colon with a large cecum. The colon was tender throughout.

The stools showed mucus and were spastic or mushy.

The patient was taken from cathartics and placed upon the usual bowel management.

She rapidly gained weight and, after several months, began to have normal defecations. She has had no further symptoms. Treatment has been entirely ambulatory (three years).

*Comment:* This case shows how a neurasthenic patient may have accentuation of a functional intestinal disturbance with reflex epigastric symptoms by a diet and the use of cathartics, as prescribed by former consultants.

No doubt this patient had a "spastic constipation," which should be treated like a chronic diarrhea. In both the intestinal tract is overactive.

*Case 3.*—Female. Age 25. Single.

The *present complaint* was chronic constipation and cathartic habit.

The patient had been constipated since a child, often going several days without a bowel movement, and then only after a cathartic or enema. She has no sensation of wishing to stool, but never has any other symptoms.

The *past history* was negative—she had never been ill.

The *physical examination* disclosed no abnormalities.

The *roentgen examination* (Fig. 12) showed slight ptosis. A slight delay of the barium meal was present in the ileum and a marked delay throughout colon, including the rectum.

The stools were usually large and formed, and otherwise normal. Rectal examinations repeatedly showed fecal material present.

*Comment:* This is a typical case of *true constipation*. She was given a moderately coarse diet, told to take more exercise and was instructed how to retrain the rectal reflex. Olive oil injections were given in place of the cathartics, although this is the type of constipation where cathartics may occasionally be used.

The results of treatment are variable. Thyroid extract occasionally helps.

*Case 4.*—Female. Age 51. Widow.

The *present complaint* was recurrent pain in lower abdomen, a sensation of a lump under the sternum, constipation, a cathartic habit, palpitation of heart and tachycardia, and nervousness.

About five years ago the patient began to have pains in the arms and legs which were thought to be "rheumatic." She began to use cathartics and at one time took castor oil every other day for two years. She began to have more or less indefinite indigestion with shifting abdominal pain and belching of gas. This was soon followed by epigastric or substernal pressure. For two or three years she has had extreme palpitation of the heart, very frequently during the night or related to bowel function. More recently she has awakened in the night with tremors "like a chill," associated with palpitation of the heart. Following this, the bowels moved two or three times and the

symptoms suddenly disappeared. Off and on she has had lower abdominal pain, which comes and goes but is related to bowel function. Cathartics work easily, cause a great deal of distress, but the patient thinks she cannot do without them. The diet has been mostly rough vegetables and coarse breads, which were prescribed by her physician. All sorts of diagnoses have been made and treatment employed, but without relief. She has had prolonged rest in bed for the heart disease with no results. At times she becomes very depressed or has fits of extreme sleepiness.

The *past history* and *family history* have no direct bearing upon the present trouble.

The *physical examination* showed a large, flabby, well nourished woman, and, although somewhat nervous, she gave the impression of having suffered a great deal of pain and distress.

The chest was negative and the heart showed no evidence of disease directly or by functional tests. The abdomen showed tenderness over the course of the colon, and the descending colon rolled under the palpating hand. The pelvic examination showed slight external hemorrhoids, a very tight sphincter, and a very poor anterior rectal wall because of an old rectocele. The nervous examination was negative.

The *roentgen examination* (Fig. 13) showed a normal esophagus and a hypertonic stomach and cap. At the end of five hours the stomach was empty and the head of the meal had reached the descending colon. There was a possible shadow of gallbladder, but no other evidence of gallbladder disease. There was some delay of the barium in lower colon. The clyster showed a small descending colon and a dilated cecum.

The stools were spastic or mushy.

*Treatment:* Perineal repair and bowel management. Calcium salts.

*Results:* The relief of constipation and other symptoms was complete. For a period of over two years she has had no further attacks of any kind and is free from symptoms as long as she is fairly careful with her diet.

*Comment:* This case illustrates the results of ignorance and the establishment of a vicious cycle. No doubt the perineal repair aided in following out bowel management, because the old rectal hernia would have made the passage of a stool a little more difficult.

*Case 5.*—Male. Age 39.

The *present complaint* was constipation, pain in the lower abdomen and back, and pain in groins running down the legs.

The patient had never been robust, but never ill. Had always been "constipated," but usually had a stool daily. Had always thought his elimination was insufficient, for the stools usually were small in calibre.

Several years ago he was advised to use coarse foods, and for the last three years has used a great deal of bran. One year before the present trouble he began to have an occasional lower abdominal pain, not localized but more frequently to the left. It usually came on early in the morning before arising, or was often present before bowel movement. There was rarely satisfaction from defecation. Sometimes he was temporarily relieved by cathartics. At times the bowels

seem "entirely inactive" and "tied up," but at others he has shifting distress and rumbling.

The distress in the lower abdomen has now become a bowel cramp, and usually comes on after the evening dinner or during the night. Rarely has tenderness been more than slight, and there has been no vomiting. The stools contained mucus but no blood has been noticed.

Reagent pure calcium carbonate and calcium phosphate were prescribed between meals. At first, tincture of belladonna was used in small doses.

Results: Relief has been complete for three years. He feels well and has no distress unless he returns to too coarse a diet. He uses no cathartics.

*Comment:* This case illustrates several points.

1. Spastic constipation should be treated with

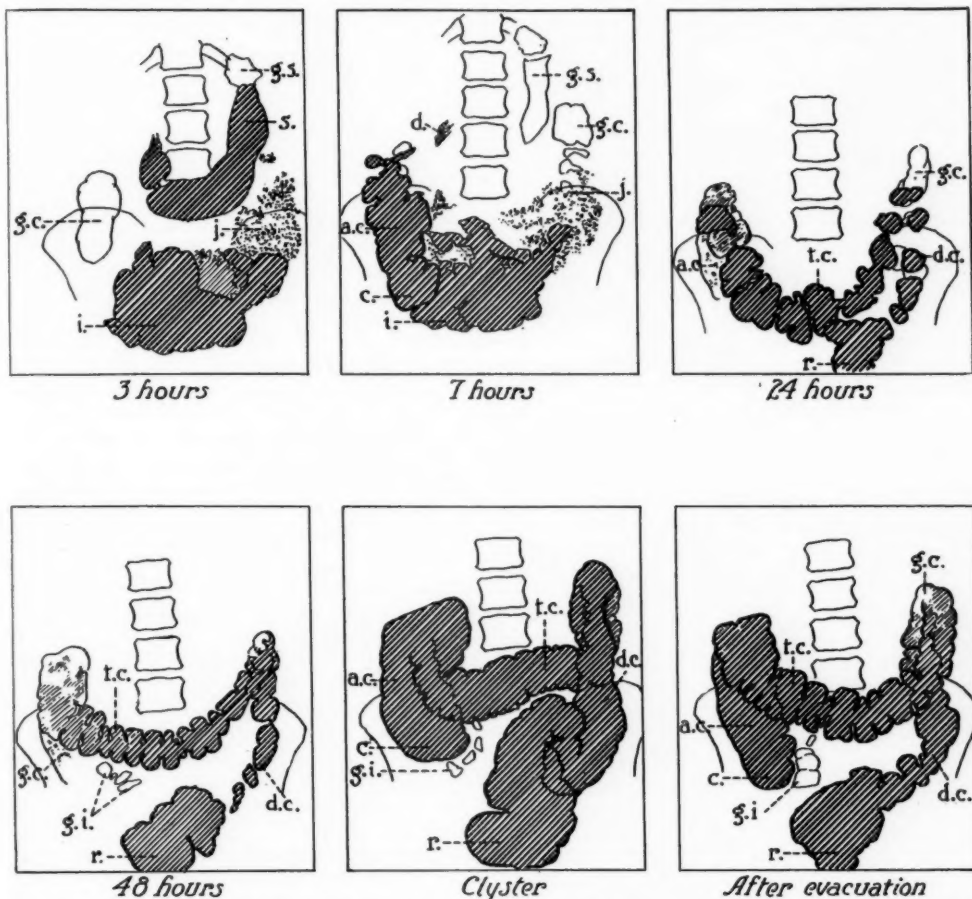


Fig. 17. Case 9. gs—gas in stomach; s—stomach; j—jejunum; i—ileum; gc—gas in colon; c—cecum; ac—ascending colon; d—duodenum; tc—transverse colon; dc—descending colon; r—rectum; gi—gas in ileum. This case was an irritable colon type. Note tendency for barium to form large spastic balls at twenty-four hours. Note the constriction of the lower descending colon, best shown on film after evacuation. The x-ray findings in these moderate cases are frequently slight and dependence must be made on the clinical findings and the examination of stools.

The examination was negative except for a tender palpable descending colon. The proctoscopic examination was negative.

There were no signs of urinary calculi. The gastrointestinal tract was normal except for a marked irritability of the colon. The descending colon was poorly haustrated and the proximal colon dilated. The ileocecal valve was incompetent.

The stools were either mushy or extremely mushy.

The treatment was a routine bowel management for the "irritable colon." Ten grains each of Merck's

"bland" or non-irritating foods and the patient kept away from all cathartics.

2. Symptoms are brought on by the poor treatment used as a "preventive."

3. A dilated proximal colon often occurs along with a spastic distal colon.

Decreased haustration is common in these cases of long-standing bowed irritability. The "sausage" colon sometimes seen in ulcerative colitis is present in many of the cases, but no true ulceration exists, and pus is never present in the stools.

4. Many "spastic" constipation cases pass through a mushy stool stage when placed upon the "bland" diet, due to relaxation of the colon, before normally formed stools appear.

Case 6.—Male. Age 28. Single.

The *present complaint* was chronic constipation and underweight.

The patient had had an appendectomy and an epigastric hernia repaired five years previously, but otherwise had been well.

He has always had a tendency to constipation, often going several days without an evacuation. For the past two years has been taking a cathartic daily, but has found that an excess of rough diet causes distress. The stools are of large calibre unless he takes a cathartic regularly.

The *examination* was entirely negative except for a palpable cecum which seemed to contract under the hand. The stools at the present time were mushy because of cathartics. A rectal examination showed feces to be present in the rectum.

The *roentgen examination* (Fig. 14) showed a decreased motility of the colon, and the rectum contained barium at 24, 48 and at 72 hours.

The treatment was directed toward retraining the rectal reflex. Muscular exercise, regularity of time for defecation, and a moderately bulky, but non-irritating, diet were prescribed. He was advised to use frequent oil enemas, so as not to overdistend the rectum. Improvement was very satisfactory.

*Comment:* This case illustrates *true constipation*, the main difficulty being due to the absence of the proper defecation reflex (*dyschezia or rectal constipation*). These cases can be treated by cathartics as long as there is no evidence of irritation. Sometimes, mechanical dilation of the anus, where there is anal spasm, or the repair of a lacerated perineum in a woman will promote a cure.

Rectal constipation occurs in only about 10 per cent of the patients who come to the office with "constipation" as the main complaint.

Case 7.—Female, Age 51. Single.

The *present complaint* was constipation all her life, cathartic habit, and rectal tenosmus for last two weeks.

The past history was entirely normal except for obstinate constipation since childhood. The present trouble started while upon a long automobile trip, when she began to feel pressure in the pelvis and could not get a good bowel movement. She stated that she had had very little movement for two weeks, even after a large enema. There was now so much pressure and distress that it was almost impossible to sit down. She had had similar trouble before, but never so severe.

The general *examination* was negative. A rectal examination showed a large rectum filled with impacted feces, and there was considerable anal spasm. Following a large enema the patient passed a "bucketful" of fecal matter.

The *roentgen examination* (Fig. 15) showed an enormous and redundant megalocolon. The redundant part of the colon caused a constriction of the barium-

filled stomach which at first looked like an hour-glass stomach.

The treatment of these cases is frequently unsatisfactory. Impaction should be prevented by giving a sufficiently bulky diet, but not to the point of irritation. Exercise, hydrotherapy, massage and other methods to increase general muscular tone are helpful. Thyroid extract is frequently indicated.

This patient was treated along this line, and showed definite improvement.

*Comment:* This case illustrates the few symptoms, other than local, from which atonic constipation cases suffer. General symptoms occur in patients who have an irritable or overactive bowel.

Case 8.—Female. Age 46. Married.

The *present complaint* was chronic constipation, "gas," abdominal pain, general weakness and loss of weight.

The patient had been well in childhood. She had had a pelvic operation of some kind at sixteen years of age; the gallbladder was drained and appendix removed twelve years ago; and the gallbladder removed two years ago. She had had severe scoliosis since childhood.

The digestive disturbances had started in infancy and she has taken cathartics all her life. Following attacks of colic, the gallbladder was removed, but the main dyspepsia and abdominal pain persisted.

She had tried all types of treatment for her trouble, including daily "high colonic douches," duodenal lavage, and a diet consisting of vegetables and large quantities of bran. All treatment had been under the direction of physicians.

The *examination* showed a frail woman weighing only 85 pounds. The abdomen was generally tender. The pelvis was negative, but a rectal examination showed a tight anus and a large rectum containing a large "baled hay" type of stool. The proctoscope showed no ulceration and the stools showed no pus nor blood.

The stools were mushy, in spastic balls, or of the "baled hay" type. Mucus was constantly present.

The *roentgen examination* (Fig. 16) showed visceroptosis, hypermotility of the stomach and no stasis in the ileum. There was some delay in the colon especially marked in the rectum. The patient had great difficulty expelling the barium meal. A clyster showed extreme irritability of the colon with irregular haustration.

The patient was placed upon a strict bowel management including heat to the abdomen. Calcium salts and belladonna were also used. During the next two or three weeks there was considerable trouble with rectal impaction, due to spastic balls of fecal material being compressed into a mass in the rectum. During the times of rectal impaction the patient complained of the symptoms of "auto-intoxication" including headache, tachycardia, muscle pain, etc., all of which were immediately relieved by a small enema. The results of treatment were very good. Her weight increased to 115 pounds, and, at the present time (two years), has to use neither cathartics nor enemas.



*Comment:* This case illustrates a case of spastic constipation with a secondary rectal dilatation, probably due to the large enemas. This is an example of the "combined type."

*Case 9.*—Female. Age 45. Widow.

The *present complaint* was nausea and dizziness, chronic constipation, cathartic habit, and malnutrition.

The *family history* showed a tendency to pernicious anemia, two of the family having died of this disease. The father had had sick headaches.

The *previous history* was essentially negative, except that the patient had had "biliousness" and vomiting when a child, and supposedly two attacks of appendicitis. She had had sick headaches with vomiting ever since a child.

The *present complaint* started indefinitely. She had had headaches with constipation and vomiting several times each year for many years. About one year ago, she started to have dizziness which had been present off and on ever since. She stated she felt stupid and had soreness down the back of the neck. There were apparently no ear nor eye symptoms to account for her trouble.

She stated that the bowels had always been irregular and the stools were spastic. She had taken a cathartic every day or so for many years. There had been a great deal of rumbling in the bowels, and passing of gas by rectum.

The *physical examination* showed a slender, poorly nourished woman of neurotic temperament. No abnormalities existed in the ears or eyes. The tongue showed slight atrophy of the mucous membrane along the edges. The heart and lungs showed no organic disease.

The abdomen was normal. The spleen was not palpable.

The nervous examination was entirely normal. There was no incoordination nor impairment of vibration sense.

The proctoscopic examination was negative.

The *roentgen examination* (Fig. 17) showed a normal stomach, without retention. The cap was normal. There was a moderate delay in the terminal ileum. The colonic clyster showed a large rectum and a spastic, deeply haustrated, redundant colon. The appendix did not fill.

The *laboratory findings* were essentially negative. The blood, urine and stomach contents were normal. There was no increase of bile pigments in the urine, blood or stools. The stools were mushy, neutral in reaction, and contained considerable starch and numerous clostridia.

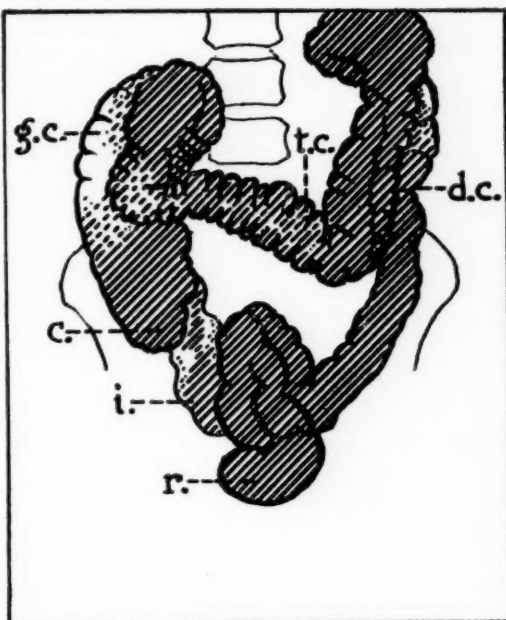
*Treatment.* The patient was given the directions for "Care of the Bowels," with a moderate limitation of bread, potato and sweets. She was also given calcium salts. The patient reported one month later. She had had no headaches nor dizziness, and was having a regular bowel movement each morning without a cathartic. The stools had become mushy, rather than the usual spastic type.

*Comment:* This case illustrates symptoms of a *spastic* condition of the bowel which has been relieved by the treatment usual for diarrhea. It is very common for spastic cases to go through a period of loose stools, due

to relaxation of the bowel by the treatment. Six months later the patient was still in good condition.

*Case 10.*—Male. Age 39. Married.

The *present complaint* was pain in the lower abdomen and back, extending to the groin and back of legs.



### Clyster

Fig. 18. Case 10. c: cecum; gc: gas in colon; tc: transverse colon; dc: spastic, poorly haustrated descending colon; i: ileum; r: rectum. Note spastic distal colon with absence of haustration; the deeply haustrated transverse colon, dilated cecum, and incompetent valve. A "sausage" descending colon is common in these cases, suggesting the possibility of changes in the colonic wall. The stool examinations show no signs of ulcerative colitis, and the proctoscopic examinations are negative. No sharp dividing line exists, in the roentgen findings, between irritable colon on the one hand, and ulcerative colitis on the other.

The *family history* was negative.

The *past history* was non-essential, except that he had suffered from so-called constipation with spastic stools, all his life.

The *present trouble* started about one year before he came to the office. He had had, however, spastic constipation for many years, and had taken large quantities of bran and coarse foods to control it. For the past year, he had had severe pain in the lower abdomen, which usually came on at night, near morning. It was increased temporarily by bowel movement, but a drastic cathartic, after a painful stool, would give relief very often for several days. At the present time, he rarely had satisfaction after a bowel movement. He had passed some mucus. There had been some relief from application of heat.

The *physical examination* showed a somewhat nervously fatigued man, with some tenderness over the left

lower abdomen. Otherwise the examination was perfectly normal.

The *roentgen examination* (Fig. 18) showed no evidence of arthritis nor urinary calculi. The colon was extremely irritable. The ascending colon was large, while the descending colon showed very poor haustration.

The *laboratory findings* were negative, except for spastic or mushy stools. There was no excess of fermentation.

*Treatment.* The patient was placed upon a "bland" diet and given calcium salts. The stools gradually became normally formed and all pain disappeared. At the present time, three years from the beginning of treatment, the patient is free from constipation and abdominal distress. There is one normal stool a day. He has some tendency to a return of the symptoms, if he returns to too coarse a diet.

*Comment:* This case illustrates another group of symptoms caused by the irritable colon, and the increase of these symptoms by an excess of coarse foods and the use of cathartics.

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## SUPREME COURT UPHOLDS AMERICAN DRUGS

A decision of the highest importance to every physician, pharmacist, drug manufacturer and, in fact, every user of drugs in the United States was rendered by the Supreme Court of the United States on October 11, 1926, when this highest tribunal of the Nation declared that the Chemical Foundation has been acting legally and properly in the purchase of the foreign drug and chemical patents, during the War, and licensing American manufacturers to produce these essential substances in this country.

The sale of the German patents to the Chemical Foundation took place during President Wilson's administration and had, without doubt, a distinct influence upon the outcome of the War, because this transfer permitted American concerns to begin at once the production of various drugs and chemicals which had, theretofore, been made only in Germany, and whose importation ceased with our entry into the war.

President Harding, apparently laboring under some misapprehension as to the purposes and functions of the Chemical Foundation, directed that suit be brought by the Government to set aside the sale of these patents to the Foundation.

The case was first tried in the Federal District Court of Wilmington, Del., and resulted, after weeks of evidence taking, in a finding against the Government on all points.

The case was appealed to the Circuit Court, which upheld the decision of the District Court in every particular.

A final appeal carried the question to the Supreme Court of the United States, where evidence was heard more than a year ago. The long delay in rendering

a decision has afforded time for mature consideration. The Court has decided unanimously that the sale to the Chemical Foundation was valid and legal and that the Foundation has made no improper use of the powers which it thus acquired.

This decision is a momentous one for everyone who has anything to do with drugs and chemicals in any way whatever.

To the physician it means that he will have a steady and regular supply of reliable drugs, of American manufacturers, which can never again be upset or cut off by the vicissitudes of war. The same considerations apply to the pharmacists. Among the vitally necessary drugs affected may be mentioned the arsphenamines, cinchophen, barbital, the flavines, procaine and a host of others.

To the drug manufacturer, who has invested thousands of dollars in apparatus for the manufacture of drugs and chemicals under the Foundation's licenses, it means relief from a certain degree of anxiety (though the outcome of the case could scarcely have been in doubt) and a tremendous inspiration to further investigations looking to the production of more and better drugs and chemicals for America.

To the nation at large, it means that reliable medicines will continue to be sold at reasonable prices; and, more or less indirectly, that the dye industry of America which is now in a flourishing condition, thanks to the Chemical Foundation, will be available for government uses should we become involved in another war.

Nor are medicine and pharmacy the only lines of endeavor affected by this momentous decision. The steel and packing industry and many others will be vastly benefited by the freedom of chemical investigation and activity which is now assured them.

# MINNESOTA MEDICINE

OFFICIAL JOURNAL MINNESOTA STATE MEDICAL ASSOCIATION, SOUTHERN MINNESOTA MEDICAL ASSOCIATION, NORTHERN MINNESOTA MEDICAL ASSOCIATION, AND MINNEAPOLIS SURGICAL SOCIETY

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The Minnesota State Medical Association  
Under the Direction of Its

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The rate for classified advertising is five cents per word with a minimum charge of \$1.00 for each insertion. Remittance should accompany order. Display advertising rates will be furnished on request.

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Subscription Price: \$3.00 per annum in advance. Single Copies 25c. Foreign Countries \$3.50 per annum.

VOL. IX DECEMBER, 1926 No. 12

## EDITORIAL

### Endamebiasis

Reports of the past few years are dispelling the misconception that endamebiasis is a disease of the tropics and subtropics. From various sources throughout the Northwest, these reports indicate that about 10 per cent of the population in the north temperate zone are infected by *Endamæba histolytica*. Nevertheless, the search for the parasite is not infrequently neglected. For this reason the widespread distribution of endameba must be emphasized from time to time.

In this 10 per cent group of the population, only a moderate number suffer with amebic dysentery and the disease is usually not severe. The inactive as well as the active cases of endamebiasis are a constant menace; it is by both that the infection continues to be spread. Many authorities consider that water and uncooked vegetables are the more common channels of infection. Flies are known to carry the endameba.

The preparation of food by a person harboring the parasite may be an unsuspected source of infection.

In several diseases of uncertain etiology, the coincident existence of the endameba, or other intestinal parasites, has suggested the question of a direct relationship between the parasite and the disease. Any addition to the etiology of such diseases as iritis, arthritis and certain dermatoses will prove invaluable, but much work remains to be done before the parasites may be considered one of the definite causes of these diseases.

The treatment of endamebiasis continues to be a difficult problem. Since the introduction of ipecac, and more particularly emetin, it has been relatively easy to control the acute symptoms. In spite of the effectiveness of emetin in the acute stages, it often fails to eradicate the parasites, and results are marred by recurrence. Arsphe-namin and, more recently, stovarsol and trepar-sol have been utilized. Preliminary reports indicate that these organic arsenical compounds are much more effective in eradicating the ameba. The saving of time and expense, together with the advantage of oral administration, favors the use of the newer arsenical compounds.

Yatren, an iodide compound, has been used more extensively in the Far East than in this country. Preliminary reports indicate that it will prove of value. As experience with endamebi-as is grows, it will become more evident that the possibilities of cure depend more on persisting with varying types of treatment than on the exclusive use of one drug.

PHILIP W. BROWN, M.D.

### Medical Relief in Disaster

The recent tornado on the Florida coast has emphasized the need of some organization to furnish prompt medical relief in case of any great disaster. The need has been apparent for some time and a very excellent committee report by Drs. Pusey, Haggard and Phillips, the last three presidents of the American Medical Association, presented the situation in a nutshell at the meeting of the Association in June.

In time of great disaster there is likely to be immediate need for additional medical relief beyond that ordinarily available. Before national, state or Red Cross agencies can assume control there is a need which should be met by some per-

manently established organization that will act instantly but only temporarily. Attention has been called to the need by the medical officers of disaster relief of the American Red Cross.

The A. M. A. committee recommends the use of the already organized profession to handle the need. The president of the county or district society is likely to be a leader among his fellow practitioners and according to their recommendation should logically act as captain of a medical corps. The president of the state association could likewise act as state director of relief in case the disaster assumed large proportions. Thus no new organization need be instituted for a need that admittedly will only rarely arise. Organizations, like organs, have a way of dying when they have no need to function. It was the further recommendation of the committee that the A. M. A. and state associations should emphasize the plan repeatedly so as to build up eventually a tradition, looking to the county president as the natural leader in case of disaster.

The A. M. A. committee plan provides for the captains in case of emergency. It would seem that each county society should make provision for additional members who could be counted upon to respond promptly in case of need.

Steps have already been taken in Minnesota to provide for the organization of several units to render medical aid of this sort. The two largest county medical societies, Hennepin and Ramsey, have approved a plan which in brief provides for the organization of a unit within the county society membership which will render medical aid in disaster when called upon by the Governor of the State, to serve under the command of the senior medical officer of the National Guard on duty in the section concerned. Provision is made for yearly election of officers, surgical and medical sections, each with its quota of nurses.

The Minnesota plan, if we may call it such, is a modification of the A. M. A. recommendation and has been formulated by those interested in the hope of avoiding a repetition of the experience at the time of the Moose Lake fire in obtaining medical volunteers. It should be mentioned, however, that the Moose Lake fire occurred during the war, when many were in the service and those at home were rushed to death.

It is incumbent upon each State Medical Association to decide upon the particular method that seems best and to act accordingly.

### Suicides and Newspapers

The unexpected turn yields wit; the unexpected event is news. Newspapers seek (legitimately and properly) to sell themselves through giving their readers an immediate enlightenment on what is going on in the world about them. Life seethes all the time, like the noisy factory. The newspaper, like the skilled machinist, sets its ears to pick out of society the unexpected, unpremeditated tones, rather than the ordinary jumble. It wants priority, and pays dearly to get it; to be in on the first discordant rumble, maintaining that it cannot concern itself with the wreckage that follows its trampling, any more than the fire department can consider ceremony and deference in getting at a fire. All this is accepted, and few there are within the medical profession who do not gladly acclaim the true professionalism of news gatherers and yield to them fully the right to elaborate the principles of their own craft and determine its ethics.

There have been five conspicuous suicides in this vicinity (Duluth) within a fortnight. The means taken by the unfortunates were drowning, shooting and gas inhalation. Many people commented on the striking sequence and the influence each may have had on those that followed. Physicians, as no others, know the turmoil that grinds in the lives of many unstable people.

It is entirely beside the point to discuss whether suiciding is ever a reasoning act. Suffice it to say that mimicry is a childhood trend that many fail to outgrow, and the mechanism of living seems too complicated at times for many whose troubles are as nothing compared with the heroic possibilities so constantly exemplified in many humans about us. Apparently, all many cringing creatures need either to turn them toward life or death is good or bad example. Would we deny the newspapers the obvious right to publish all the details of suicides? No. But, may we not at least ask them why they reiterate the gruesome account three to five times on successive days, each time planting the awful seed in the fallow soil always about us? On the first day, the front page carries the announcement; the next, a statement of the funeral arrangements; later editions discuss the funeral, and usually the death notices finish it up. Each time, however, there is the repetition as to the exact manner of the suicide, and each time this comes out it may be the firebrand that muddles another turbulent mind.

E. L. T.



## OBITUARY

### Dr. Louis B. Baldwin

Louis B. Baldwin was born October 27, 1872, in New York State, the son of T. D. Baldwin, a farmer of that state.

He was a graduate of the College of Medicine and Surgery of the University of Minnesota in 1897, and served his internship in the City and County Hospital of St. Paul.

He practiced in Cando, North Dakota, for two years. In 1900 he became Assistant Superintendent of the State Hospital for the Insane at Jamestown, North Dakota, and from that time on devoted himself to hospital administration. He later became Superintendent of the North Dakota Institution for the Feeble Minded. In 1910 he was made Superintendent of the University Hospital at Minneapolis, a position which he held for sixteen years, until his death.

He directed the building and equipment of the Miller Hospital in St. Paul and was its Superintendent for the first years of its existence. About the same time he became Director of the newly organized Nicollet Clinic in Minneapolis, and was carrying the responsibilities of these two new organizations, along with that of the University Hospital, which was also gradually undergoing expansion.

During the war Dr. Baldwin held the rank of Captain and later of Lieutenant Colonel in the Medical Corps. He was stationed in the office of the Surgeon-General at Washington, D. C., where his knowledge of hospital administration was of inestimable value.

Dr. Baldwin was a member of the Hennepin County Medical Society, the American Psychiatric Association and the American Hospital Association, serving as president of the last named organization during 1920-1921.

He died October 24, 1926, after an illness of several months. His wife and daughter, two brothers and his aged mother survive him.

Dr. Baldwin was unflinching in his enthusiasm and in the energy which he gave to a task. His absolute honesty and his devoted loyalty to employees and fellow workers endeared him to his friends, whether of high or low degree. There were no evasions nor half-way measures in his strenuous, never-tiring life, which ended at the age of fifty-four with more accomplished than is accomplished in most lives with an added twenty-five years.

It is the opinion of those who knew him best that his unwavering devotion to the work at hand, without recreation or diversion, was in a large measure the cause of his death at an age when his powers of achievement were at their highest.

The following memorial to Doctor Baldwin was drawn up by his fellow associates at the University of Minnesota:

Louis B. Baldwin was built of the sterling stuff that goes into the making of a true man. He was strong, earnest, faithful. He lived according to his light. A staunch friend, a fair fighter who fought for the thing he believed to be right, he was one who could yield,

but who could not compromise. Defeated, he could again join hands with those who differed from him and still work on.

He was an able administrator by nature and by training. He rendered good service alike to the States of North Dakota and Minnesota. He was a loving son of his Alma Mater. He was a loyal colleague; capable of personal sacrifice in any cause he espoused; he admired strength and candor; he was intolerant of weakness in any man.

He has done a good work and has done it well. His associates deplore his early death. They realize the emptiness of the place he has so well filled.

They share the grief of his family. They would fain offer them some effective solace. They are glad for the legacy of honor and faithfulness he has left to them—a consoling memory of him whom they have lost.

To their friend his fellows of the Faculty of the Medical School give their last "Hail and Farewell,"—a fitting salute for a soul as strong and brave as his.

### Dr. Otto F. Fischer

Dr. Otto F. Fischer died suddenly Monday, October 11, at his home in Houston, Minnesota, at the age of 54 years. Death was due to angina pectoris.

Otto Ferdinand Fischer was born at Le Sueur, Minnesota, August 21, 1872, the son of Rev. and Mrs. Ferdinand Fischer. He received his early education in the schools of Northfield, Minnesota, after which he entered the medical school of the University of Minnesota. His internship was served at Asbury Hospital and St. Mary's Hospital in Minneapolis. Following this he served a term as Assistant Physician in the Quincy Mining Company's medical service at Hancock, Lake Superior, Michigan.

Dr. Fischer began his private practice in Caledonia, Minnesota but soon afterward moved to Houston, where he had maintained a practice for the past twenty-eight years.

Dr. Fischer was a member of the Houston-Fillmore County Medical Society and had acted as secretary of that organization for the past twenty years. He was also a member of the Minnesota State Medical Association and a Fellow in the American Medical Association.

Dr. Fischer was active in civic affairs in his community. He served as a member of the school board in the Houston district for a number of years. He was a director of the Houston State Bank at the time of his death and had long been a leader in church work in the community.

Dr. Fischer is survived by a brother, Dr. Arthur F. Fischer of Hancock, Michigan, and two sisters, Miss Martha A. Fischer of Ladysmith, Wisconsin, and Miss Laura C. Fischer of Sioux City, Iowa.

The following resolutions were passed by members of the Houston-Fillmore Medical Society in remembrance of their secretary:

Resolutions of the Houston-Fillmore County Medical Society.

Whereas, it has pleased Almighty God in his infinite wisdom to take out of this world the soul of our de-

ceased brother, Dr. O. F. Fischer, causing great sorrow and regret to the medical fraternity;

Whereas, Dr. Fischer was a member in good standing of the Houston-Fillmore County Medical Society, having faithfully served as its secretary for many years, was an ardent worker for the society since its incipency and had thereby won the admiration and high esteem of its members;

Whereas, the doctor had gained the love and affection of the community in which he practiced his chosen profession by ministering to the sick with skillful hands and a kind heart, relieving both physical and mental distress and suffering—

Be it resolved, that we reverently and humbly bow to the will of an all-wise Providence, believing that He doeth all things well and to the glory of his name.

Resolved, that in the untimely death of Dr. Fischer the Houston-Fillmore County Medical Society has sustained a great loss and that his absence will be keenly felt by its members.

Resolved, that the community has lost an able, efficient and conscientious physician, whose passing will leave many sorrowing hearts and cherished memories of a kind and sympathetic doctor whose ministrations were freely bestowed.

And be it further resolved, that a copy of these resolutions be sent to the members of the bereaved family that they be published in the Houston Signal and that they be spread on the records of the Houston-Fillmore County Medical Society.

H. W. CHRISTIANSON, M.D.  
L. K. ONSGAARD, M.D.  
R. V. WILLIAMS, M.D.

### Dr. C. L. Coddington

Dr. C. L. Coddington, who practiced medicine in Duluth for thirty-four years, died Friday, November 5, at the home of his son, J. Albert Coddington, in Virginia at the age of 69.

Dr. Coddington came to Duluth in 1888 and served for years in public capacities in addition to his medical work. His public service included twelve years on the board of education and several terms as a member of the library board. As a member of the latter organization he was instrumental in obtaining the erection of the Duluth public library. He was a member of the St. Louis County Historical Society and of other groups.

Dr. Coddington was born in Towanda, Pa., May 21, 1857. He was graduated from the medical college of the University of Pennsylvania in 1883, and after practicing medicine in the Pennsylvania coal mine regions for several years, he came to Duluth, where he opened his office in 1888. He retired in 1922 and for the next two years resided at his country home near Deerwood. Since then he made his home with his son in Virginia. The widow and his son survive.

### Dr. James Walter Warren

Dr. J. W. Warren of Faribault died suddenly at his home Friday, October 15, at the age of 45 years.

Dr. Warren had been a practicing physician and surgeon here for the past three and one-half years. He was born in St. Paul, Minnesota, where he received his early education. He lived for a number of years at Charlottesville, Va., where he attended the University of Virginia, receiving the degree of doctor of medicine from this school.

Dr. Warren practiced in Blooming Prairie, Minnesota, and four years ago entered into partnership with his brother, Dr. F. S. Warren of Faribault.

In 1912 he was united in marriage to Miss Ellabelle Coe of St. Paul, who survives. Dr. Warren is also survived by three children; a brother, Dr. F. S. Warren of Faribault; and three sisters, Mrs. J. George Smith of St. Paul, Miss Grace E. Warren of St. Paul and Mrs. Archie W. Hawkins of St. Louis, Mo.

### Dr. James Edward Merrill

James Edward Merrill, a practicing physician of Amboy, Minnesota, for the past twenty-nine years was born in Ontario, Canada, April 19, 1867. He lived in Winnipeg during his boyhood and then moved to Minneapolis. In his early manhood he attended Parker College at Winnebago and later the University of Minnesota, being graduated from the Medical School of the latter institution in 1896. He practised at Winnebago for a short time, where he married Gertrude May Hargreaves. He then established an office in Amboy, where he has resided ever since, and where his four children were born and brought up.

Dr. Merrill was actively interested in all public offices. He was especially prominent in the National Guard and went to the Mexican Border with that organization in 1916, as a Major of the Medical Corps of the Second Minnesota Regiment. He also served as Sanitary Inspector at Deming, New Mexico, in 1917, but was forced to leave the service on account of ill health.

He was known to his friends as a robust, active man, fond of athletics and of all outdoor sports. Only a few weeks before his death he took a trip up into the north woods of St. Louis County, but was taken home from there because of his failing strength. The past winter was spent in California on account of his poor health, but he returned to his practice in the spring for a short time before he was finally overtaken by the fatal malady which brought about his death in Mankato on August 7, 1926, at the age of fifty-nine years.

Dr. Merrill was a highly esteemed member of the Masonic Lodge, the Odd Fellows and the Rebekas, all of which organizations officiated at his funeral, which was held at Amboy. Friends from Amboy and all the neighboring towns filled the church and overflowed onto the lawn to pay their last tribute to their beloved physician and friend.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### MINNEAPOLIS SURGICAL SOCIETY

Dr. John B. Deaver of Philadelphia will address the Minneapolis Surgical Society at its December meeting at 8 P. M., Tuesday, Dec. 2, 1926, in the library of the Hennepin County Medical Society, Donaldson Building, Minneapolis. The subject of Dr. Deaver's address will be "Chronic pancreatitis," illustrated by lantern slides.

All physicians are cordially invited to attend.

### INTERSTATE POSTGRADUATE ASSEMBLY

The annual meeting of the Interstate Postgraduate Medical Association of North America at Cleveland in October boasted an enrollment of between five and six thousand. The rather distinguishing features of this year's meeting were the larger number of foreign guests and the frequency on the program of symposia.

Officers for the year are: President, Dr. Carl L. Larsen, Saint Paul; president-elect, Dr. Lewellys F. Barker, Baltimore. The following officers were re-elected: Managing director, Dr. William B. Peck, Freeport, Illinois; associate managing director and treasurer, Dr. J. Sheldon Clark, Freeport, Illinois; executive secretary, Dr. Edwin Henes, Jr., Milwaukee.

Kansas City has been selected for the October, 1927, meeting of the Association.

### UPPER MISSISSIPPI MEDICAL SOCIETY

The upper Mississippi Medical Society and the Stearns-Benton County Medical Society held a joint meeting at Little Falls, Minnesota, Wednesday, October 27, 1926.

The following program was given:

1. Fractures—Dr. A. E. Amundson, Little Falls, Minn. Discussion: Dr. T. Davis, Wadena, Minn.; Dr. E. Johnson, Bemidji, Minn.
2. Goiter—Dr. Fred H. Stangl, St. Cloud, Minn. Discussion: Dr. J. A. Thabes, Brainerd, Minn.
3. Observations in Obstetrics—Dr. Fortier, Little Falls, Minn. Discussion: Dr. F. J. Schatz, St. Cloud, Minn.; Dr. B. W. Kelly, Aitkin, Minn.
4. X-ray Diagnosis of Gall Bladder Disease—Dr. M. J. Kern, St. Cloud, Minn. Discussion: Dr. R. Gillmore, Bemidji, Minn.; Dr. M. P. Gerber, Brainerd, Minn.
5. Headaches—Dr. H. L. Lamb, Little Falls, Minn. Discussion: Dr. H. E. McKibben, St. Cloud, Minn.

### WEST CENTRAL MINNESOTA MEDICAL SOCIETY

At the meeting of the West Central Minnesota Medical Society held at Morris, Minnesota, Oct. 23, 1926, the following program was given:

The Latest Treatment of Burns—Dr. O. V. Opheim, Starbuck.

Medical Legislation—Dr. Chas. Bolsta, Ortonville.

Medical Ethics—Dr. C. R. Christenson, Starbuck.

A discussion followed each paper after being read. The society indorsed Dr. Bolsta's paper containing the

proposed bill which will come before the coming legislature known as the Basic Science Bill. Dr. J. D. Weir of Beardsley was designated as director of medical relief in disaster.

The following committee was appointed on publicity: Dr. C. F. Ewing, Wheaton, for Traverse County; Dr. Chas. Bolsta, Ortonville, for Big Stone County; Dr. E. T. Fitzgerald, Morris, for Stevens County; Dr. H. Linde, Cyrus, for Pope County.

The annual meeting will be held at Graceville, Dec. 11, 1926.

### WABASHA COUNTY MEDICAL SOCIETY

The members of the Wabasha County Medical Society were entertained Tuesday evening, October 19, by Dr. Arnold Anderson at the Buena Vista Sanatorium, Wabasha. Following the dinner, Dr. J. S. Collins, president of the society, acted as toastmaster.

Dr. J. F. Bond was the first speaker on the program. Dr. William Cochrane read a paper on "The Ethics of the Profession." Dr. Anderson spoke on "The Cure of Tuberculosis" with demonstrations of x-ray pictures.

John R. Foley, County Attorney, addressed the Society on the high ideals of the medical profession.

Before concluding the program, Dr. Jesse Slocumb summarized the evening's entertainment with his own definition of fellowship.

### THE ASSOCIATION OF CLINICAL TECHNICIANS

The Association of Clinical Technicians is an organization established in 1923 among laboratory technicians in Minneapolis and Saint Paul, which is steadily growing in numbers. The organization has for its objectives: (1) to promote higher standards in clinical laboratory methods and research; (2) to elevate the status of those specializing in laboratory technic; (3) to create closer cooperation between physician and technician; (4) to classify technicians according to ability, training and experience.

Membership, which is by examination, approximates sixty men and women, who are classified into three groups: (A) Those having university or college degree; (B) those having high school training or its equivalent, and who are also graduates of some recognized laboratory course; (C) Those with less preliminary education but six months or more of practical experience. About twenty-five per cent of the membership belong to group A, sixty per cent to B, and fifteen per cent to C.

With sincere gratitude the Association acknowledges real assistance and encouragement, in the past, from many physicians of Minneapolis, but for the future it hopes for yet greater cooperation from others of the medical profession and that every non-member technician be urged to join for the sake of mutual benefits.

President: Mrs. Loren C. Babcock, 1041 12th Ave. S. E., Minneapolis, Minnesota.

Secretary: Miss Mae Deighton, 714 Donaldson Bldg., Minneapolis.

Placement Officer: Miss Eunice Nyholm, 522 La Salle Bldg., Minneapolis.

## OF GENERAL INTEREST

Dr. D. E. McBroom of Faribault recently returned from an extended visit in California.

Dr. C. W. Rumpf of Faribault has returned from a three weeks' visit to the clinics in the East.

Dr. and Mrs. William H. Rumpf, Jr., formerly of Ann Arbor, Michigan, are now making their home in Saint Paul.

Dr. Peder A. Hoff and Dr. Alfred Hoff have announced the removal of their offices to 734 Lowry Building, Saint Paul.

Dr. L. B. Ohlinger, formerly of the U. S. Veterans' Base Hospital, No. 68, of Minneapolis, is now located at Rochester, Minnesota.

Dr. and Mrs. T. A. Peppard of Minneapolis have returned from a three weeks' visit in New York, Boston, Philadelphia and Washington, D. C.

Dr. Oscar H. Wolner of Eveleth, Minnesota, has formed a partnership with Dr. Ivar S. Benson, Montevideo, Minnesota, in conducting the Montevideo Clinic.

Dr. E. T. Sanderson of Minneota, who was recently operated upon for appendicitis, is making a good recovery. Dr. F. D. Gray of Marshall, Minnesota, attended Dr. Sanderson in his illness.

Dr. Arthur E. Mahle, who was associated with the Mayo Clinic, Rochester, prior to his removal to Peoria, Illinois, is now located at 30 North Michigan Avenue, Chicago, where he has established a practice.

Dr. Henry W. Grant of Saint Paul and Miss Elizabeth Johnston, daughter of Mr. and Mrs. Frank W. Johnston of Minneapolis were married at the home of the bride's parents, Saturday, November 6, 1926.

Word has been received of the election of Dr. Leon J. Tiber of Saint Paul as president of the American Medical Association of Vienna, where Dr. Tiber is studying surgery, gynecology and obstetrics. Dr. Tiber expects to return to his practice in Saint Paul next spring.

Dr. James J. Barfield has severed his connections with Riverside Sanatorium, Granite Falls, Minnesota, where he has been medical director for the past seven years, and is now associated with Cragmor Sanatorium, Colorado Springs, Colorado, where he will continue tuberculosis work.

Nearly 2,000 school children were given a vaccine against scarlet fever and diphtheria at the first free clinics conducted by the Hennepin County Medical Society Saturday, November 6. The clinics are being conducted in different school buildings in Minneapolis each Saturday from 9 to 11 a. m.

Dr. George E. Brown and Dr. Alfred W. Adson of Rochester, Minnesota, presented the subject "Physiologic effects and surgical applications of lumbar sympathetic ganglionectomy and ramisectomy" before the Minnesota Pathological Society at their meeting in the Institute of Anatomy, University of Minnesota, Minneapolis, Tuesday evening, November 16.

Announcement has been made of the transfer of Dr. George W. Phillips of the regional office of the United States Veterans bureau at Sioux Falls, S. D., to Hospital No. 68, Minneapolis. Dr. Phillips, a tuberculosis

specialist, was formerly stationed at the Aberdeen Hospital in Saint Paul, where he was a member of the staff from the time it was opened until 1923 when he went to Sioux Falls.

Dr. J. A. Myers of Minneapolis was elected president of the Minnesota Public Health Association at their annual meeting in Saint Paul, Thursday, November 4. Other officers elected for the year include Dr. O. E. Locken, Crookston, first vice president; Dr. Harold S. Diehl, Minneapolis, second vice president; Mrs. E. L. Youmans, Winona, secretary, and Dr. E. A. Meyerding, Saint Paul, executive secretary.

Under the sponsorship of sixty eminent specialists in children's health, education, and welfare, a new national periodical called "CHILDREN, The Magazine for Parents," has just made its initial appearance with an October issue. "This magazine," it is announced by George J. Hecht, president of the Parents' Publishing Association, New York, under whose auspices it is issued, "will have no propaganda purpose, being dedicated solely to mothers and fathers, for the sake of a new generation of normal, intelligent and healthy children. In this it will have the active coöperation of the leading educational and child welfare agencies, private, public and governmental."

Among the editors of the new magazine are: Miss Julia C. Lathrop, Angelo Patri, Glenn Frank, Judge Ben B. Lindsey, Dr. Livingston Farrand, Dr. Helen T. Woolley, James E. West, Mrs. Sidonie M. Gruenberg, Mrs. Jane Deeter Rippin and Dr. Bela Schick.

The new fireproof addition to the Northwestern Hospital, Minneapolis, made possible through the contributions of Minneapolis citizens, was formally opened in November. Construction was started last year on the new wing. The addition has six floors with room for eighty extra beds, giving the hospital 200 beds in all, besides six sun parlors, six operating rooms and various auxiliary departments.

### NEWS FROM THE MAYO CLINIC BULLETIN

Dr. H. J. Fortin, of Fargo, North Dakota, has come to the Clinic as a consultant in the Section on Orthopedic Surgery.

*Interurban Surgical Society:* The meeting of the Interurban Surgical Society was held in Rochester, November 19 and 20.

Dr. William Robinson, of Sunderland, England, and his son, Dr. Victor Robinson, visited the Clinic during the week of October 10.

Dr. K. Hirotsaki, of the South Manchuria Railway Company, China, visited the Mayo Clinic during the first week of November.

Dr. Roberto Alessandri, Professor of Surgery, University of Rome, gave a Mayo Foundation lecture on the evening of October 15.

Dr. S. T. Parker announces the opening of offices at 717 Cobb Building, Seattle, Washington, for the practice of dermatology and syphilology.

Dr. W. Aubrey Crich announces his association with the Lockwood Clinic, Toronto, for the practice of dental radiography and elimination of mouth infections.

Dr. Carl S. Williamson announces the opening of offices, Suite 17 Urquhart Building, Little Rock, Ar-



kansas, for the practice of surgery and surgical consultation.

*Dr. Oliver C. Melson*, who was formerly at the Mayo Clinic, is now associated with Dr. John R. Dibrell, in the practice of diagnosis and internal medicine, Little Rock, Arkansas.

*Dr. Hans C. Jacobaeus*, Professor of Clinical Medicine, University of Stockholm, spent several days in Rochester before going to Cleveland to attend the meeting of the Interstate Postgraduate Assembly.

*Minnesota Society of Internal Medicine*: The newly organized Minnesota Society of Internal Medicine held its first meeting in Rochester on November 8. The membership of this society consists of internists throughout the state.

*Dr. and Mrs. S. W. Harrington* left Rochester October 19, for New York City and sailed for England November 3 on S. S. "President Roosevelt." They will visit England, Scotland, Holland, Belgium, Germany, Austria, France and Italy, where Dr. Harrington will spend much of his time in the surgical clinics of the large cities. He will remain longest at the clinic of Sauerbruch in Munich and of von Eiselsberg in Vienna. They will sail from Italy in January and return to Rochester the latter part of the month.

*Index to Collected Papers*: "Index to Collected Papers of the Mayo Clinic and Mayo Foundation" has just been published by W. B. Saunders Company. To quote the foreword, "This General Index of the Collected Papers of the Mayo Clinic and The Mayo Foundation has been prepared in response to a widespread demand. It covers all volumes of articles published from the Mayo Clinic to 1925, including Volumes I to XVI of the Collected Papers of the Mayo Clinic 1905 to 1924, inclusive, Volumes I and II of a Collection of Papers 'Published Previous to 1909,' and Volumes I and II of Papers from the Mayo Foundation and the Medical School of the University of Minnesota. Supplementary volumes are planned for the future." Copies of the Index may be obtained from W. B. Saunders Company, West Washington Square, Philadelphia.

*Professor Sauerbruch's visit postponed*: A letter has been received from Professor Sauerbruch, of Munich, Germany, stating that conditions have arisen which make it impossible for him to carry out his plans to come to America this fall. He hopes that it will be possible for him to come for several weeks next year.

*Speakers from the British Isles*: Wednesday, October 13, the program at the meeting of general staff was postponed to give the time to speeches by three distinguished visitors at the Clinic. Mr. Archibald Young, Professor of Surgery, University of Glasgow, Mr. David Wilkie, Professor of Surgery, University of Edinburgh, and Mr. W. Sampson Handley, of London, were the speakers of the evening. Mr. Young and Mr. Wilkie have come to this country to be the guests of the Interstate Postgraduate Assembly at the meeting in Cleveland, and Mr. Handley is one of the authorities on cancer from England who attended the International Cancer Symposium, at Lake Mohonk, New York, in September.

*The J. William White Scholarship*: On the recommendation of the Medical Graduate Committee the

Board of Governors of the Mayo Clinic has awarded the J. William White Scholarship for the Study of Surgery in Foreign Countries to Dr. Estes H. Hargis for conspicuously meritorious work during his fellowship in The Mayo Foundation. This scholarship was made possible by a gift from the late J. William White, Professor of Surgery, University of Pennsylvania; and it is open to physicians who have received the degree of Master of Science from the University of Minnesota for work done in The Mayo Foundation. Dr. Hargis is the first recipient of the award. He is a graduate of the University of Pennsylvania of the class of 1921 and entered The Mayo Foundation as a fellow in surgery in July, 1923. The thesis which he presented in partial fulfillment of the requirements for the degree of Master of Science in Surgery at the University of Minnesota was: "Plethysmographic study of the changes in the volume of the spleen in the intact animal" and his degree was conferred in June, 1926. He will probably sail for Europe early in 1927.

#### HEALTH DAY PROGRAMS

Four Health Day Programs, given in Southern Minnesota cities the latter part of October, have received much praise from members of the medical profession and laymen for the work accomplished.

With a purpose of acquainting the public with the truth about health they were sponsored by four organization: The Minnesota State Medical Association, the Minnesota Public Health Association, the State Board of Health and the University of Minnesota Medical College.

The Medical Association, through Dr. George Earl, sub-chairman, and Dr. E. A. Meyerding, state secretary, arranged the programs, which were free to the public and largely attended. National publicity, through press wires, was given many of the statements of medical men of the speakers' personnel. This, of course, aided greatly in promulgation of public health education which otherwise might have been much more costly.

Included among the speakers were: Dr. A. J. Chesley and Miss Mildred Smith, of the State Board of Health; Dr. W. A. O'Brien, of the University of Minnesota Hospital; Dr. E. A. Meyerding, of the Minnesota and Ramsey County Public Health Associations; the Rev. H. A. Vernon, Minneapolis; the Rev. W. C. Sainsbury, St. Paul; and Badger Clark, nationally famous poet and lecturer.

Funds from Christmas Seal Sales permitted the defraying of much of the expense of the program as well as the cost of "Chew Chew," the Health Clown, who gave health talks to children in more than a score of schools in that part of the state. The four cities visited were Blue Earth, Worthington, Fairmont, and Pipestone.

Among the doctors who aided committees in the cities visited were:

Worthington: Doctors S. A. Slater, F. M. Manson, C. P. Dolan, B. O. Mork, C. R. Stanley, J. T. Small-

wood, F. G. Watson, and (dentists) A. R. Schmidt, L. R. Gholz, M. F. Cramer, and G. C. Turner.

Pipestone: Doctors W. G. Benjamin, A. H. Brown, Thomas Lowe, E. G. McKeown, H. D. Jenckes, W. E. Richardson, W. J. Taylor, E. S. Perrigo, E. H. Argetsinger, E. E. Argetsinger, S. L. Elliot, and J. E. Schapler.

Blue Earth: Doctors J. A. Broberg, W. C. Chambers, F. W. Logan, C. E. Wilson, and W. A. Demo.

Fairmont: Doctors H. P. Johnson, R. C. Hunt, F. N. Hunt, G. H. Luedtke, W. J. Richardson, V. H. Gardner, H. M. Markin, H. A. Roust, and (dentists) H. L. Bursell, R. H. Zierke, W. G. Tull, K. W. Scott, L. A. Degan, and W. L. Webb.

Because of the unusual success of these programs and the great demand for additional ones throughout the state, there will be a repetition of a large part of the work in three other cities in December.

Cities to be visited will be Brainerd, December 8, Little Falls, December 9, and Saint Cloud, December 10, according to tentative plans.

Health movies, exhibits and musical selections will precede the programs. Subjects to be given in language understandable by laymen will vary from discussion of the benefits of vaccination to pre-natal care and general health education. Motion pictures will supplement the talks.

#### CHRISTMAS SEALS

One of the happiest expressions of the true Christmas spirit that the holiday brings is the broadcasting of tuberculosis Christmas Seals. These attractive little tokens bearing the double-barred cross, international insignia of the anti-tuberculosis campaign, are again on hand to brighten our Christmas mail and on all sides we hear the appeal "Buy Christmas Seals—fight tuberculosis."

Minnesota physicians are particularly interested in the success of the seal sale this year because of the close coöperation existing between the State Medical Association and the Public Health Association, which is entirely financed by the penny stamps. A series of health days, in which these two organizations coöperated, held during the year demonstrated the effectiveness of the Associations working hand in hand, and more extensive coöperative efforts are planned for the coming year.

For nineteen years penny seals have provided revenue for the local, state, and national battle to beat back the great White Plague. From the laboratories of our great universities, where research work for a specific cure for tuberculosis is sponsored by the National Tuberculosis Association, to Minnesota's remotest villages, where free clinics and school health educational work are conducted, the penny stamps carry on their unceasing campaign against the enemy.

The tuberculosis death rate has been cut in half in the past twenty years, but the fight is still far from done. In Minnesota alone the White Plague killed 1,586 people in 1925, and authorities estimate that there are now over 14,000 active cases in the state.

We can all have our modest share in the job of disseminating information about tuberculosis by investing a few dollars in Christmas Seals, and help in extending the practice of using them on all holiday mail.

## PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

### SOME ASPECTS OF HYPERTENSION\*

HENRY L. ULRICH, M.D.

Minneapolis

It is within this generation of physicians that the term essential hypertension (hyperpiesia of Albutt) has emerged from its nebulous haze into a definite clinical syndrome, standing clear and unashamed in its havoc of terminal events—cardiac failure, vascular accidents, encephalomalacia and renal insufficiency. Arteriosclerosis as a cause has been properly adjudged as an effect. Only in the last decade has the vascular kidney been separated from the contracted kidney of Bright's disease. The importance of these ideas is difficult to exaggerate. As they become more common they bring out the general impression that this functional condition is on the increase.

On the heels of this clarification there comes the usual question as to the cause or causes for this clinical syndrome. I will wave aside the speculative features which are usually hinted at in this discussion, such as the stress, hurry, and habits of our modern life. Nor will I indulge in the delightful speculation on the relative merits of the antipodal racial, social, psychic and dietary differences, if these are factors, in explaining hypertension in the Occidental in contrast to its absence in the Oriental.

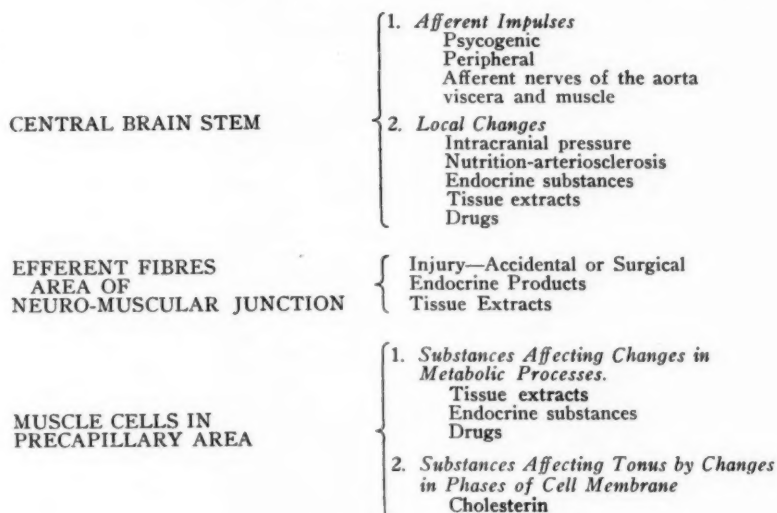
Your own histories, as well as O'Hare<sup>1</sup> in this country, and numerous writers on the continent have called attention to the factor of inheritance (the genotypic factor) in hypertension. From 50 to 60 per cent of hypertensives give familial history. Of the paratypic factors, the psychogenic, the hormonal, and the toxogenic are given primary importance. These acting singly or in interplay, or in interference; or their action on or in interference with the gens of inheritance can produce hypertension. We must admit that this is a backhanded explanation of hypertension. It recognizes a constitutional habitus. It merely states that clinically we have seen psychogenic hypertensives who have improved under psychotherapy. We have seen a larger group of women, in normal climacteric or precox state, which has exhibited hypertension following cessation of ovarian function, and in which the pressure was influenced by proper hormone therapy. Again we have seen another large but less obvious group, to whose tension we have attributed a disturbance of metabolism. These clinical assumptions in no wise give us a true picture of the mechanism of the change.

There must be a physiology of hypertension (see Chart I). Briefly the vasomotor apparatus consists of a center, probably in the medulla, the nerve fibres made up of the vegetative system, the muscles being the smooth muscle cells in the arterioles of the precapillary

\*Presidential address read before the Minnesota Academy of Medicine, Sept. 15, 1926.

## CHART I.

## TEMPORARY SCHEMA OF VASOMOTOR APPARATUS



area. Granting the variations in activity of the center, and changes in function of the fibres, the mechanical result (pressure) lies in the function or dysfunction of the muscle cells in the precapillary areas. The allied states such as vascular crises and Raynaud's disease, may be an expression of central or peripheral nerve dysfunction; in essential hypertension the possible change in the physiology of the individual muscle fibres must be emphasized. Of the many forms of stimuli which lead to rise in blood pressure there appear to be three leading conditioning causes for hypertension (omitting for the moment the nephritic type), vasomotor instability, hormonal changes, and primary changes in the physiology of the muscles themselves. This changed state leads to an increased response to stimuli and a new state of tonus, so that relaxation is not commensurate with contraction. Pal<sup>2</sup> in a discussion of the physiology of muscle of hollow organs such as the intestines, bladder and blood vessels, calls attention to the importance of tonus to their function. If one empties a bladder normally the state of the muscle of the viscus is relaxed; if one empties the bladder by catheterization the muscle is not wholly relaxed; if it is emptied against resistance, the muscle of the viscus is in a state of marked contraction. Each one of these states is a tonus following its respective stimulus. In all muscles, smooth or striated, there is a kinetic contraction following a stimulus, and a state of tonus following this, which may or may not be the same as before the kinetic activity. Physiologists, in studying the function of tonus, call attention to the tonus of muscles in bivalves. After closing, the muscle holding the valves together will continue to do so for days and weeks without loss or the consuming of any energy as measured by oxygen exchange. Some anal-

ogous process must occur in the fixation of the tonus of the muscles in the precapillary areas in hypertension. Fixation of function to a perverted form is not a new concept in medicine. Auricular fibrillation is a functional change in the heart muscle. Even with quinidine fixation occurs in 50 per cent. That a person can go on with this change in his physiology for ten, twenty or thirty years is as startling and puzzling as is the idea of a change in the vasomotor apparatus for an equally long period. Westphal<sup>3</sup> has called attention to a perversion of function in his paradoxical reaction of the peripheral vessel to certain stimuli. He obtains this reaction by compressing the brachial artery for one minute, then suddenly releasing the pressure. In normal cases the capillaries as seen under the microscope are filled with blood—there is a plethora of the capillaries and peripheral vessels due to dilatation. In the hypertensive the reverse is seen. Instead of dilatation a constriction is noted. What capillaries are seen, practically disappear. The mechanical stimulus of the sudden rush of blood in the brachial and its branches induces a contraction of the capillary and precapillary areas.

In the two great classes of hypertension, that of the nephritic and the essential group, we now know that the anatomic bases are different. The cause of pressure in nephritis is not as yet definitely settled. The retention of abnormal products of metabolism has been designated as a factor. How and where they act is not clear. The compensatory contraction in the precapillary bed of the kidneys may be the explanation. Aside from the question whether nephritis is a purely renal or generalized tissue (capillary) disease the recent observations of Blackfan<sup>4</sup> in acute glomerular

## CHART II.

31 CASES WITH HYPERTENSION  
DIASTOLIC BELOW 110

NAME	AGE	REMARKS	BL.PR.	CHOLESTEROL
Roxsberry	68	Possible Decomp. Hyper.	120/80	98 mg.
Urabie	67	Hypertension Decomp.	156/98	128
Urabie	67	Hypertension Compensated	156/94	200
Rogers, L.	72	Hypertension Decomp.	90/70	146
Morley	54	Auric. Fib. Comp.	160/80	153
Swenson	57	Hypertension Compensated	130/100	150
			122/64	
Gausman	63	Decompensated	170/100	154
Zimmerman	52	Hypertension Compensated	172/100	162
Schwartz	65	Hypertension Decomp.	180/90	165
Boardman	63	Hyper. Decomp. Diab.	160/90	167
Russel	55	Toxic Adenoma Exoph.	196/108	170
Beasley	69	Fluid in Rt. Base	160/100	170
Dover	78	Auric. Fib.	210/100	179
Wallace	60	Hyper. Decomp.	122/90	180
Swingley	53	Hypertension ?	224/108	184
Bannon	45	Decompensated	160/100	190
Hyams	48	Hypertension Decomp.	96/58	
			160/100	190
Johnson	49	Hypertension	180/64	191
Stephens	58	Hyper. Comp.	160/88	191
Anderson, J.	45	Rheum. Fever Hyper.	192/96	195
Oniel	71	Fairly Well Compensated	188/108	198
		Compensated	150/90	198
Halverson	33	Hypertension Compensated	165/90	200
Runstrom	50	Cong. of Lobes	144/100	200
Barron	21	Pleural Effusion	160/102	200
Bloomberg	46	Hypertension	192/104	205
Stein	67	Hyp. G. B. Jaundiced	194/86	221
Slingerland	57	Diabetes, Comp.	164/102	224
Smith, Ann	67	Hypertension	172/94	232
Anderson	53	Edema of Ankles	148/100	240
Tomlinson	67	Mildly Decompensated	140/104	243
Reeves	60	Cong. at Bases	200/100	290
Joax	83	Compensated	150/100	300
(19) Hyper 61. + %		(11) Ortho 35.5%	(1) Hypo 3%	

nephritis of children is of interest. In children all the factors usually attributed as causes for hypertension can be ruled out. He noticed the rise of blood pressure always was associated with increased intracranial pressure, independent of the severity of mildness of the renal lesion (as judged by the urinary findings and the retention products in the blood). This intracranial pressure was due to edema. When the edema of the brain was relieved by changes in osmotic tension following the intravenous injection of hypertonic salt solution or the hypotonic solution of 1 per cent magnesium sulphate, the fall of the blood pressure was immediate. The appearance of the brain in acute glomerular nephritis is quite different from the appearance of the brain in tubular nephritis, the so-called nephrosis of Volhard and Fahr. In the former the convolutions are being obliterated, in the other they are preserved. Whether the absence or presence of pressure in these respective diseases is due to different types of edema, intercellular or intracellular, is not clear. The hypertension in acute glomerular nephritis of children is a compensatory affair to counteract intracranial pressure—a life saving process. Whether this idea is applicable to the subacute or chronic forms of glomerular nephritis of adults remains to be seen.

The presence of pressor substances has been searched for in the circulating blood of hypertensives. In this

country Major<sup>5</sup> has observed in two cases of hypertension increased excretion of guanidin bases in the urine, with fall of blood pressure during diuresis following the use of digitalis and caffeine. Experimentally he<sup>6</sup> has been able to increase blood pressure by injection of guanidin compounds in dogs. Howard and Robinowitch<sup>7</sup> were unable to find guanidin bases increased in the circulating blood of hypertensives. In fact they found them more often decreased than in normals. They were able to find an increased excretion of guanidin compounds in the diuresis induced by calcium and potassium chloride in hypertensives. The rise of pressure following the injection of hormone such as adrenalin and pituitrin are old established facts. Their presence or the finding of increased amounts of these substances in the circulation in hypertensives has never been demonstrated.

The feeding of cholesterol to rabbits by Anitschkow<sup>8</sup> and others, to bring about arterial changes such as atherosclerosis, brought out the interesting fact that it also induces prolonged rises of blood pressure. Westphal<sup>9</sup> was able to corroborate this observation. He then attempted to demonstrate the action of cholesterol on the isolated arterial strip. The experiments gave beautiful demonstrations of the influence of cholesterol on the contraction of the smooth muscle in the arterial wall. The contraction of the strip immersed in Ring-



CHART III  
CASES WITH HYPERTENSION  
DIASTOLIC 110 OR OVER

NAME	AGE	REMARKS	BL.PR.	CHOLESTEROL
Carpenter, H.	56	Arteriosclerosis	180/125	110 mg.
Becker	85	Hypertension Decompensated	150/110	134
Becker	85	Hyper. Early Decompensated	200/110	219
Roby	65	Hyper. Far Advanced Tbc	210/120	140
Powers, Lucy	51	Decompensated	150/120	145
Wilson	47	Diabetic, Comp.	180/130	160
Dahlstrom	67	Hyper. No Decomp.	210/140	167
Rollins, H.	58	Hyper. Comp.	210/120	169
Bannarn	45	Mildly Decomp.	165/110	173
Nelson	67	Decompensated	175/110	181
St. John, Martin	52	Hyp. Cardiac Hyper.	166/110	184
Jones, Anna	18	Hyp. Renal Involvement	220/130	185
Heyman, Mary	52	Hyp. Lues	252/140	188
VanBuren, Geo.	48	Hypertension	228/128	191
Smilowitch	55	Hyp. Cardiac Hyper.	246/120	191
			230/112	220
Jacobson	63	Hyp. Not Decomp.	200/110	195
Dale, Winifred	45	Hyp. Cardiac Hyper.	166/110	196
Glackner, V.	72	Hyper. No Decomp.	170/110	197
Mawn	54	Hyp. Markedly Decomp.	194/150	200
Nelson	67	Hyp. Decomp.	168/116	200
Noble	79	Hyp. No Decomp.	220/140	200
Anderson	58	Decompensated	190/120	201
Bethel	50	Comp. Hyper.	178/110	210
Bradfield	48	Compensated	170/130	210
Farrington	73	Hyp. Decomp. Hydrothorax	185/130	210
Gacke, J.	42	Hyper. Lues	210/150	210
Gacke, J.	42	Hyper. Lues	210/150	220
Palmer	58	Diabetic, Hyper.	164/110	213
Allan	72	Hyp. Markedly Decomp.	164/120	214
Lewis	60	Hyper. Decomp.	194/114	214
Olson	63	Hyper. No Decomp.	210/130	217
Peal, Leah	46	Hyper. Parox. Tachy.	188/134	217
Murray	67	Effusion at Right Base	160/120	222
Solberg, Elida	63	Hyper. Cerebral Hem.	196/128	227
Thompson	66	Hyper. Congest. of Bases	260/160	230
Gilmore	70	Hyper. Decomp.	246/134	240
Biemal	53	Early Decomp.	216/110	260
Biemal	53	Mildly Decomp.	216/110	242
Olson	65	Hyp. Early Decomp.	220/132	244
Lukosky	43	Hyper. Cardiac Asthma	160/110	256
Somers, J.	45	Hyper. No Decomp		
		Renal Involvement	230/160	250
Cloud, Della	42	Hyp. Mild Decomp.	242/132	254
Ingraham, J.	42	Decompensated	184/142	333
Weik	54	Diabetic, Hyper.	184/114	400
(34) Hyper. 80.9%		(7) Ortho 17%	(1) Hypo 2%	

er's solution properly buffered with serum colloids showed a marked difference from the one immersed in a similar fluid without cholesterol. There was a stronger and more prolonged reaction to stimuli, such as adrenalin or oxygen, with an increase of tonus lasting twelve to fourteen hours. In the uncholesterinized strip the reaction was prompt and the relaxation equally as rapid.

Overton and Meyer<sup>10</sup> have shown the significance of lipoids for cell membranes. Colloids, lecithin and cholesterol play an important part in the physiology of the individual cells of the body. Cholesterol outside of fat is the only non-water-soluble substance in the body. Its relation to cell metabolism is of extreme importance. Lecithin and cholesterol are antagonistic in this connection. Lecithin is hydrophilic; cholesterol is hydrophobic. Briefly, Westphal's argument, to which he brings an array of collateral facts, is that cholesterol changes the physico-chemical phases of cell activity by modifying

the cell membranes, thereby affecting the exchange of ions, gases and water. The action on the cell membrane surrounding the muscle cells in the arterioles modifies the internal activity of the cells to such an extent that their reaction to stimuli and their tonus is entirely on a different basis. He concludes that cholesterol is a tonogenic substance to smooth muscle. He observed further in arterial strip experiments the absorption of cholesterol. The cholesterol content of the arterial strips immersed in cholesterol had increased.

The French have called attention to the increased cholesterol contents in the blood of hypertensives, nephroscleroses and pregnant women, associated with a high cholesterol content in the adrenals. Westphal<sup>11</sup> reports 71 per cent of the cases hypertension show hypercholesterinemia. Of the remaining 29 per cent the larger number were high normals. Only a few with decompensation and edema or cachexia showed a lower level than normal. Cholesterol is the only metabolite

CHART IV.  
NON-HYPERTENSIVE CASES

GROUP OF NORMALS:  
20-30 yrs. old

B.G.	180 mg.
A.G.	161 mg.
E.C.	170 mg.
V.A.	165 mg.
L.K.	180 mg.
V.S.	150 mg.
R.B.	135 mg.
E.S.	160 mg.

NAME	AGE	REMARKS	BL.PR.	CHOLESTEROL
Tibbets	56	A.I.	190/68	139 mg.
Hunezok, Jennie	38	Rheumatic Fever		144
Fletcher	25	A.S.	118/42	150
Hicks	69	Hemiplegia	185/75	162
Oseng	24	M.I.	118/88	170
Campbell	18	Pleural Effusion	116/68	170
Nelson	30	A.I.	140/50	175
Deinhardt	60	A.I.	140/50	185
Elliott	53	Aortic I.	128/76	186
Down	15	M.I.	122/76	190
Mattock	63	Luetic Aortitis	134/66	195
Thompson	22	Diabetic		198
Kroff	56	A.S.	104/78	214
Dragon	19	Diabetic		225-28-30
Kraft	62	Aortic Aneurism, A.I.	152/85	255
Halverson	37	S. Anemia; Cancer of Liver	140/84	476
Johnson, Alex	63	P.A.	86/40	65
Johnson, Axel	81	P.A.	110/50	66
Lewis, Mary	62	P.A.		71
VanLannen	56	P.A.		76

A.S.—Aortic Stenosis; A.I.—Aortic Insufficiency; M.I.—Mitral Insufficiency; S.A.—Secondary Anemia; P.A.—Pernicious Anemia.

so far which has been found increased or changed from its normal level, with any degree of consistency or regularity, in hypertension. Following the experiments with arterial strip and the consistent finding of hypercholesterinemia in hypertension, Westphal feels justified in the assumption that it is a tonogenic substance and that it is in close relation to the production of this functional change.

In allied states of arterial derangements, such as vascular crisis, migraine, gout, and even diabetes, hypercholesterinemia is a fairly constant finding. The hypercholesterinemia of diabetes may be on an entirely different basis than that of hypertension. Here the associated lipemia may be a factor in the flooding of the blood. There is a closely associated valence of fat and lipoids. Their physiological chemistry is not as yet wholly known. In severe anemias, fevers, and hypotension there is a hypocholesterinemia.

There are conditions in which there is hypercholesterinemia without a rise of blood pressure. The nephroses are the most striking of this group. The heaping up of cholesterol in the blood in this disease is particularly high. In fact it is used as a diagnostic procedure to separate it from the nephritides. In true nephritis there is no hypercholesterinemia. The physico-chemical states of nephrosis and hypertension are markedly different. The water imbalance, the tendency to swelling of the tissues, the shifting of the colloids of the blood, and the reduction of ions are entirely opposite to that of hypertension. In nephrosis when the edema disappears the cholesterol sinks to its

normal level. This is in contrast with the hypertensives in whom the cholesterol contents decrease when edema appears. The mechanism for the rise and fall of cholesterol in the one must be opposite in the other. There is a marked difference in the fixation of the cholesterol. In hypertension it is fixed loosely to the albumin fraction; in nephrosis it is fixed to the globulin and fibrinogen fractions of the serum. The intravenous injection of an appropriate dose of adrenalin produces a marked rise of blood pressure in hypertension. In nephrosis the response to the same dose is sluggish and far below that in the normal.

Pregnancy is another state in which hypercholesterinemia is found. The resemblance of the physico-chemical shifting of the colloid, water, and salt, in this condition aligns it closely in this sense to the nephroses.

The concept that abnormal manifestations of function are due to physico-chemical derangement is not new. In hypertension there may be either changes in ionic chemistry, or hormonal imbalance, or vasomotor instability; and that any one of these, plus the heaping up of cholesterol, may produce changes in contraction and tonus of the blood vessel walls, is comparatively new. That some such variation from stability is essential before cholesterol can play its part is quite obvious. We can conclude therefore that hypertension is the result of a number of factors, vasomotor instability, hormonal changes and perverted physico-chemical processes. Abstractly speaking, then, given a number of variables acting antagonistic or synergistic on a constant—that is a changed physico-chemical state of the smooth

muscles of the arterioles—produce hypertension. The treatment of the condition testifies to this most eloquently. Rest, psychotherapy, hormones, drugs, tissue extracts, change of diet, including salt, blood letting and lumbar puncture, all have produced changes in pressure.

Since the beginning of the year I have had examined the blood of 72 cases of hypertension for cholesterol. The findings corroborate Westphal's data. We get 74.4 per cent hyper; 23 per cent ortho; and 2.6 per cent hypo. We have used Bloor's method. Westphal estimates the cholesterol in the plasma. We have used whole blood. The problem was merely to see if there was a hypercholesterinemia. The variations and their causes are to be examined later (see charts). Arbitrarily I have divided the cases into two groups: one in which the diastolic pressure is 110 or over, the other in which the diastolic is under 110. There were forty-one in the "110 or over" group and thirty-one in the "below 110" group.

In closing let us review briefly what is known of cholesterol metabolism.<sup>12</sup> Its origin is in the food. It is absorbed as an ester and circulates in the blood, two-thirds as an ester, one-third as a free state. Its level in the blood is fairly constant. Its excretory organ is the liver. The ovary, gonads and adrenals are repositories. It is found in the bile in a free state varying from 2 per cent to 6 per cent. It is changed by saprophytes in the bowels to coprosterin. Another portion is reabsorbed. It is suspected that bile acids are formed from cholesterol. While oxidative evidence is at hand it is not a source of heat. It is present everywhere in the body. There is some evidence that there is an endogenous formation. Its characteristic property is to resist mixture with water, and according to its concentration to influence the cell membranes of the body and to absorb poisons. Cholesterol balance is only obtained by means of intestinal digestion. Fat is necessary for its solution. Besides insufficiency of the liver as a source of retained cholesterol there are: mobilization of lipoids in nephrosis; ether narcosis; and infection. In pregnancy there is a rise of cholesterol in the blood with a corresponding fall in the bile. After labor there is a reversal of the curves to normal.

The high content of cholesterol in the blood of hypertensives as far as can be determined must be assumed to be due to liver insufficiency. In this connection the use of liver extracts to reduce tension has been of acute interest within the last few years. Major has been able to make a liver extract which is free from choline, histamine or peptone. MacDonald's<sup>13</sup> extract contains no protein derivatives. These men so far have been satisfied with reports of blood pressure curves following the use of these extracts. How or where they act in reducing tension has not been mentioned. Their successful reports again emphasize the possible rôle the liver plays in regulation of metabolic processes. My next effort in the study of this functional condition will be in seeing what effect the injection of these extracts has on the cholesterol level of the blood; and in cases where there is hypercholesterinemia to see what effect diet, rest, and variations of ions will have on cholesterol levels.

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Note: The technical procedures in this paper were done by Miss Laurene Krogh, to whom we take this opportunity to express our thanks and appreciation for her cooperation.

## TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

The regular November meeting of the Minneapolis Surgical Society, given over entirely to a dry clinic, was held at the Minneapolis General Hospital, on November 18, 1926. Dinner was served at the hospital before the meeting, through the courtesy of Dr. Walter E. List, Superintendent.

The meeting was called to order by Dr. Robitshek, President, and turned over to Dr. Zierold, who had arranged the clinical program. The following cases were presented:

*Case 1.*—A girl thirteen years old was admitted to the hospital in March, 1926, complaining of pain in the right lower abdomen, radiating to the right shoulder and right side of the chest, and accentuated by any sudden movement. Pain had begun suddenly in the night three weeks previously. Vomiting and obstipation occurred for several days after the onset. There was a history of a severe fall as a baby. For as long as she could remember she had had attacks of vomiting, accompanied by abdominal cramps and with constipation, and periods of dry cough. X-rays of the chest confirmed by barium meal and barium enema demonstrated a diaphragmatic hernia through right diaphragm containing part of the transverse colon. Pneumothorax was well tolerated and showed the absence of adhesions between the hernia and the visceral pleura. At operation by Dr. Zierold, a flap of the lower right chest wall was turned laterally, the sac opened, adhesions separated and the colon dropped back into the abdomen; the opening in the diaphragm was repaired and the chest wall closed. There was a temporary sterile hemothorax after operation, the recovery being

otherwise uneventful. Patient, as can be seen, is now in very good health.

Cases 2, 3 and 4 formed a group of cases of duodenal ulcer, presented by Dr. Cranmer as a basis for his discussion of the various types of operation used. The first was a case of simple duodenal ulcer coming to operation because of financial inability to complete a proper course of medical treatment. The ulcer was not sufficiently close to the pylorus to permit a typical Horsley pyloroplasty. Excision was performed by elliptical longitudinal incision in the duodenum and closed in a transverse direction, using the Horsley type of suture. The incision was extended proximally far enough to sever the pyloric sphincter. Gastro-enterostomy was not done. There was a general informal discussion of the various steps of this operation.

The second case was a penetrating ulcer very close to the pylorus. A Finney pyloroplasty was performed.

In the third case, operated by another member of the staff, a Billroth I operation was performed. All three patients have been markedly benefited by their treatment; they are entirely free from discomfort now.

There was a general discussion by the members present as to the various operations for duodenal ulcer, their modifications, and the indications for each.

Case 5.—A boy, five years old, in April, 1924, suffered a fracture of the left femur. A month later there appeared a purulent infection of the knee joint, without bone involvement. Dr. Zierold opened the knee joint by a longitudinal lateral incision and the patient was then treated according to Wilm's method. The patient is able to demonstrate that he can run around normally.

Case 6.—This case was presented by Dr. T. H. Sweetser to illustrate a method of differential diagnosis applicable to certain obscure cases. A man fifty-nine years old had pain in the right lower abdomen and rectum. At rectal examination a hard very firm mass, apparently a stone, could be felt in the location of the right seminal vesicle. Roentgenogram showed a shadow in this location but it could not be decided whether the stone was in the seminal vesicle or in the stump of the right ureter. A nephrectomy had been performed ten years ago. Cystoscopy showed obliteration of the right ureteral meatus. To settle the difficulty an injection of sodium iodid was made into the right vas deferens by the Bellfield method, roentgenogram being made at the same time. A beautiful picture was obtained showing the vas deferens, seminal vesicle and ejaculatory duct; the shadow of the stone was shown to be in contact with but outside the shadow of the seminal vesicle. The right ureter was later removed and found to be markedly dilated and surrounded at the lower end by fibrous and inflammatory tissue.

Case 7.—A case of hypernephroma with metastases. Roentgenograms and a microscopic section from one of the subcutaneous metastases were shown. The microscopic section gave the first indication of the location of the primary tumor; cystoscopy and pyelogram completed the diagnosis. Dr. Watson, the hospital pathologist, discussed this and other types of tumor in which a diagnosis can and often must be made from the character of the metastatic nodules. Dr. Ude, the roentgenologist, presented the roentgenograms and discussed the distribution of metastases in this type of

tumor. There was a general discussion of these problems.

Case 8.—This case of acute gangrenous appendicitis, with perforation and abscess formation, was presented by Dr. Regnier because of the severe post-operative complication. Twelve days after operation the patient had fever and signs of beginning pneumonia in the right lung. Dr. Ude presented a series of beautiful roentgenograms showing the hilum type of pneumonia, the gradual development of an abscess in its center, the gradual complete resolution of the pneumonia, and the collapse and disappearance of the abscess. The patient was treated by the postural drainage method, being placed on the sound side face down with the foot of the bed elevated one to three feet, three times a day. Dr. Regnier discussed the various methods of treatment that might have been used had the abscess not disappeared under the treatment given.

Case 9.—A chronic, perforating, duodenal ulcer with almost complete pyloric obstruction and with blood persistently present in the stools and stomach contents. Dr. Regnier performed a posterior isoperistaltic gastro-enterostomy as close to the pylorus as possible. The patient has made an excellent recovery, has gained thirty-five pounds in the past three months, and takes a fairly liberal diet without distress. Several badly infected teeth have since been removed. Dr. Regnier discussed the advisability of placing the gastro-enterostomy close to the pylorus and showed roentgenograms of the post-operative course in support of his contention. Resection of the ulcer, he said, would have been the operation of choice in a bleeding, perforating, duodenal ulcer, but it was found at operation that resection of this particular ulcer would have been impossible.

Case 10.—A case of penetrating ulcer on the lesser curvature of the stomach with a fairly large pocket and very little six hour retention of barium in the stomach. Dr. Regnier performed a "V" shaped resection with a cautery by the Balfour method; gastro-enterostomy was not done, there being no adhesions or pyloric obstruction. The patient went home four weeks after the operation and has gained ten pounds in weight. X-ray studies since the operation have shown some persisting but decreasing deformity at the site of the ulcer; the patient feels well, and it is thought that this deformity will probably disappear. The stomach empties normally. Regulation of the patient's diet is being continued, with a modified Sippy regime. Dr. Regnier emphasized the importance of pre-operative medical treatment and continuance of the medical treatment for at least six months or a year after operation.

Dr. Ude discussed the roentgenographic appearances after various operations on peptic ulcers of the stomach and duodenum.

Dr. McPheeters told of a case illustrating the great value of the gastro-enterostomy when there is pyloric obstruction.

Dr. White discussed the importance of pre-operative medical treatment, stating that it often incomplete and ineffective unless very strictly carried out and frequently checked by aspiration of the stomach. He told of a patient in whom there was a very surprising and complete disappearance of the deformity in the stomach



outline during a course of strict Sippy management. He also emphasized and illustrated the importance of eliminating all foci of local infection from such patients.

Dr. Robitshek spoke of the necessity of modifying the type of treatment according to the status of the patient as well as according to the type of ulcer.

Executive session was held after the adjournment of the scientific meeting.

THEODORE H. SWEETSER, M.D.,  
Secretary.

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

## PEDIATRICS

### SUPERVISORS:

CHESTER A. STEWART,  
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,  
MANKATO CLINIC, MANKATO

**CHOREA TREATED WITH INJECTIONS OF MILK:** A. Hymanson, M.D. (Archives of Pediatrics, October, 1926). Non-specific protein therapy has been successfully applied in many diseases in adults and in not a few in children. The remedy is believed to owe its action to acceleration of metabolic processes and incidental stimulation of the defensive forces of the body. Careful observers have shown that parenteral injections of any sort of protein into animals, whether normal or diseased, and even in minimal doses, will cause an increased elimination of urea and  $\text{CO}_2$ . In animals infected with certain pathogenic microbes, as those of typhoid fever, an injection of protein results in an increase in the formation of antibodies and agglutinins after an initial leucocytosis especially marked as to neutrophils. There is an increase in blood platelets, fibrinogen, thrombokinase and blood sugar. All of the secretions of the body are increased and muscular efficiency is augmented in the frog, including the action of the heart.

The non-protein therapy has been carried out especially with intramuscular injections of boiled milk in all forms of disease because this substance is readily available, inexpensive, easily sterilizable and comparatively free from unpleasant collateral effect.

The average duration of chorea is given as from 11 to 13 weeks. This is at least twice as long as these

cases treated required. The results obtained in chorea by milk injections were very satisfactory and the treatment can be recommended.

R. N. ANDREWS, M.D.

**THE INCIDENCE OF ENDOCARDITIS IN EARLIEST CHILDHOOD:** Paul D. White, M.D. (Amer. Jour. of Diseases of Children, October, 1926). Endocarditis in infancy is rare, but even during the first year of life it may occur, and when it does it appears to be more often associated with infection of "septic" nature rather than with rheumatic infection.

Acute articular rheumatism and chorea are very rare in infancy, but increase progressively in frequency after the age of 2 years. It is to be remembered that often very mild rheumatic infections and even rheumatic carditis alone may occur in early childhood.

Endocarditis after the age of 2 years becomes more common, and is much more likely to be associated with rheumatic rather than with septic infections as the child grows older.

Many cases of endocarditis in early childhood are of unknown cause, and doubtless account for much of the chronic valvular disease of obscure etiology found in older children at school age and after, and in young adults. It is probable that the largest percentage of these doubtful cases result from unrecognized rheumatic infection, often very mild, and sometimes affecting the heart alone. It is possible that some of the doubtful cases may result from septic infection in infancy or afterward.

Careful observation of the condition of the heart at birth, and during and after every infection in early childhood, is an important measure in the collection of data for the analysis of the large group of cases of endocarditis of unknown origin. Even a slight rise of the temperature above normal or unexplained malaise may mean endocarditis in a child, particularly in the climate of northeastern United States where rheumatic infections are so common and so serious, especially in crowded damp homes in the winter and spring. The presence or absence of a family history of rheumatic infections should always be determined; it appears to be of considerable importance.

It is possible that in some cases endocarditis may develop in children very insidiously, with no evident infection to call attention even to the need of medical advice. Routine physical examination, such as is now becoming the practice is the case of many adults annually, would detect such endocarditis in its early stages.

Young children with rheumatic endocarditis rarely die, and so necropsy findings revealing early or relatively slight mitral valve involvement are rare. Clinically one finds the loud systolic murmur of mitral regurgitation often preceding the diastolic murmurs of mitral stenosis and of aortic regurgitation in the date of discovery.

R. N. ANDREWS, M.D.

## ROENTGENOLOGY

### SUPERVISORS:

LEO G. RIGLER,  
MPLS. GEN'L HOSPITAL, MINNEAPOLIS  
A. U. DESJARDINS,  
MAYO CLINIC, ROCHESTER

**THE RELATIVE VALUE OF CHOLECYSTOGRAPHY AND THE SO-CALLED DIRECT AND INDIRECT METHODS OF ROENTGENOLOGIC EXAMINATION OF THE GALLBLADDER:** Case (Am. Jour. of Roent., Sept., 1926). The intravenous method of administration of the tetraiodophenolphthalein is strongly advocated. The author finds that he can make it a safe office procedure which gives him a maximum amount of information as compared with all other methods. It has the very great advantage over the oral in that a definite dose of the dye has been positively introduced into the blood stream, thus eliminating the question of failure of capsules to dissolve or of incomplete absorption of the dye. Therefore failure to visualize the gallbladder is almost positive evidence of pathology, and has been confirmed in 95 per cent of the author's cases by operation. In this method variations from normal intensity of the gallbladder shadow can also be given significance as indicating disease, which is a very unreliable finding with the oral method.

The indirect signs of gallbladder disease in use before the introduction of cholecystography are evaluated, and the following given importance as strongly suggestive of gallbladder pathology: (1) Visualization of the duodenum beyond the duodenal bulb; (2) an inconstant deformity of the duodenal bulb; (3) spastic manifestations in the stomach or bowel, or both; (4) spastic manifestations in the stomach in the absence of a demonstrable gastric or duodenal ulcer. Discredit is thrown on the interpretation of elliptical shadows in the right upper quadrant as due to the gallbladder unless confirmed by the dye method. The author finds even jaundice not a contraindication to this method.

The technic of the intravenous administration of the dye is described in detail, and reproductions of characteristic findings are shown.

WALTER H. UDE, M.D.

**THE ROENTGEN-RAY TREATMENT OF KELOID:** Grier (Am. Jour. of Roent., July, 1926). The author has had uniformly satisfactory results in the treatment of keloids with unfiltered roentgen rays. An 80 to 90 per cent skin erythema dose is given at each treatment, and an interval of eight weeks is allowed to elapse between treatments. In estimating the above dose, attention is carefully given to the size of the area to be treated. The author finds that the factors which he uses will produce a faint erythema in an area  $\frac{1}{4}$  in. square in seven minutes, while they produce a similar reaction in an area 2 in. square in three minutes. Total number of treatments seldom exceed 4 to 5.

WALTER H. UDE, M.D.

**THE RELIABILITY OF CHOLECYSTOGRAPHY BY THE ORAL METHOD AS SHOWN BY AN ANALYSIS OF ONE HUNDRED CONSECUTIVE CASES:** Stewart and Ryan (Am. Jour. of Roent., Sept., 1926). The authors are advocates of the introral method of cholecystography, and are very emphatic in their assertions that this method properly carried out is just as reliable as the intravenous method of administration of tetraiodophenolphthalein. The oral method is favored by them because it has the great advantage of simplicity, lack of severe reaction and danger to the patient, and can be used as a routine office procedure with absolute reliability.

An analysis of 100 consecutive cases revealed a total number of 60 reported as pathological. Twenty-three of these were operated upon and in 21 (91 per cent) the diagnosis was verified. Impressions based on "faint shadow" alone are discredited. Freshly prepared dye and carefully controlled technic are advocated as of prime importance.

WALTER H. UDE, M.D.

## EYE, EAR, NOSE AND THROAT

### SUPERVISORS:

VIRGIL J. SCHWARTZ,  
PHYS. & SURG. BLDG., MINNEAPOLIS

E. L. ARMSTRONG,  
FIDELITY BLDG., DULUTH

**THE GENERAL MANAGEMENT OF INCIPIENT CATARACT OF ADULT LIFE:** Luther C. Peter (Jackson Birthday Volume). In a strict sense, cataract should be looked upon as a disease of the lens, the impaired nutrition being largely the result of uveal disease, which in turn may arise from local causes such as eye-strain, choroiditis, conjunctival and lacrimal inflammations, or from more remote causes such as metastatic infections from foci and intestinal toxemias. Correction of refractive errors alone frequently relieves ciliary congestion so markedly that the nutrition of the lens is greatly improved and the cataract remains stationary or even clears slightly. However, well-developed striae of the lens have rarely, if ever, been absorbed or dissolved. It is the diffuse lenticular haze and vitreous opacities with which best results have been obtained. The creation of a marked hyperemia in the conjunctiva and the adjacent ocular tissues, leading to improved nutrition and to the promotion of osmosis and endosmosis, has brought gratifying results in appropriate cases.

Three types of cases are chosen for treatment: first, diffuse clouding of the lens; second, striations in the peripheral layers of the lens, between the adult nuclear layer and the subcapsular zone; third, complicated cataracts with posterior capsular deposits. Results are best

in the first group, fair in incipient cases of the second group, and of some value in the third group when added to the usual treatment for uveal disease.

Attention must be directed toward the pharynx and teeth, chronic nasal conditions, lacrimal obstruction and disease, intestinal toxemia and the elimination in general; also small doses of tincture of iodine in milk, given over a period of several months, may help to arrest the cataractous process.

The most important of all the local, direct treatments has been found to be subconjunctival injections of 1 to 6,000 cyanide of mercury solution. After cocaineization, 12 to 14 minims of the solution are drawn into a syringe and to this are added 3 or 4 minims of 1 per cent acoin solution, and the whole is injected beneath the conjunctiva (*not* beneath Tenon's capsule), up and out, well away from the limbus. Moderate soreness and marked edema and hyperemia of the conjunctiva and lids then set in, but these diminish rapidly on using hot applications.

After the redness disappears an eye bath of Dor's solution (one per cent each of sodium iodide and calcium chloride in distilled water) is ordered twice a day for ten or fifteen minute periods. As an alternate to this treatment, 5 per cent dionin solution may be dropped into the eye every third night before retiring. The vision must be taken and the lens observed at regular intervals.

The results have been encouraging in the types of cases already mentioned, particularly in early general, diffuse lenticular clouding, wherein rapid, often astonishing and permanent improvement has taken place. Absorption of exudates and of anterior and posterior capsular deposits have frequently been seen in complicated cataract. In all these cases the action of this solution or of any similar lymphagogue is not directly upon the cataract, of course, but upon the existing ocular pathology; improvement in the circulation of the uveal tract is followed at once by improvement in the nutrition of the avascular structures of the eye, the vitreous, lens and cornea.

VIRGIL J. SCHWARTZ, M.D.

**THE CHEMOTHERAPY AND SERUM THERAPY OF PNEUMOCOCCUS AND STREPTOCOCCUS MENINGITIS:** John A. Kolmer, M.D., Professor of Pathology and Bacteriology in the Graduate School of University of Pennsylvania (Archives of Oto-Laryngology, June, 1926). Yerger states that 5 per cent of those with otitic and 1 per cent of those with nasal accessory sinus infection develop meningitis. Netter reports mortality of these meningitis cases as about 100 per cent when treated by spinal puncture and the intraspinal injection of antistreptococcus or antipneumococcus serum.

Kolmer used dogs in his experimental work. Mercurochrome-220 soluble had no appreciable effect on the mortality of experimental pneumococcus and streptococcus meningitis. Also the same was true of gentian violet, neutral acriflavine and rivanol. Likewise the injection of the various sera had no beneficial effect.

Lavage and drainage is the treatment of septic meningitis. He trephined and washed one or both ventricles through to the cisterna magna with Ringer's solution—escape of the fluid being provided for by insertion of a needle into the cisterna magna, using from 20 to 40 c.c. of fluid.

One treatment usually was sufficient to save the animals when the controls all died. In the treatment of humans, the usual sera or dyes could be injected after the lavage and left in the ventricles.

E. L. ARMSTRONG, M.D.

## BOOK REVIEWS

### BOOKS RECEIVED FOR REVIEW

**INTERNATIONAL CLINICS.** Edited by Henry W. Cattell, A.M., M.D., in collaboration with others. Volume III. Thirty-sixth series, 1926. 310 pages. Illus. Philadelphia and London: J. B. Lippincott Company, 1926.

**HYGEIA OR DISEASE AND EVOLUTION.** Burton Peter Thom, M.D. 107 pages. New York: E. P. Dutton & Company, 1926.

**LIFE INSURANCE MEDICINE. A STUDY OF ITS PROBLEMS AND THEIR RELATION TO CLINICAL MEDICINE.** Collection of papers by members of the Medical Department, New England Mutual Life Insurance Company. Vol. I. 219 pages. Illus. Boston: New England Mutual Life Insurance Company, 87 Milk Street, 1926.

**OUR DOCTORS.** Maurice Duplay. Translated from the French by Joseph Collins. 279 pages. Cloth, \$2.00. New York: Harper & Bros., 1926.

This book will be read with great interest by both the laity and the medical profession, but for very different reasons. The lay reader will be fascinated by being admitted to the hospital wards, the insane hospital, the research laboratories, and all the interesting details of the busy doctor's life. He will feel that he sees life in the raw and is in the confidences of the physician. The medical reader will enjoy it because of the reality of the picture portrayed; he will smile at many of the conceits and foibles displayed in so realistic a manner and he may recognize many as his own. He will sympathize with the disappointments of the research worker, the stupidity of some of the medical students, and the difficulty of proving a confrere's guilt in a criminal abortion.

The hero, Professor Daruel, is young, handsome, wealthy, and successful, but hard and egotistical. He enjoys life to the fullest extent, spending his mornings at the hospital operating, and carrying on research work on cancer, his afternoons at office practice, and evenings divided between medical literary work and his various amours. He finally meets a patient's daughter who attracts him strongly but he is afraid of submerging his personality in marriage, as some of his friends have done, so he brings her to Paris and establishes a

liaison which brings him content and happiness until she develops carcinoma of the breast. At the prospect of losing her he realizes how much she means to him, so marries her and gives her every possible care but the tumor recurs and she dies, leaving him desolate without an interest in life. He neglects teaching and research work, becoming merely a practicing automaton. It remains for his old friend and master, Claude Mauceaux, to awaken his interest and revive his old enthusiasm in his work. This old man is a truly lovable character, and with his active, alert mind burning brightly in his pallid, emaciated body, he resembles a disembodied spirit. His philosophy is interesting, as for instance when Daruel says he has nothing to live for he replies that he himself has learned to live for his afternoon cup of cocoa. Then he says: "One can get much pleasure from just looking."

As Daruel gradually picks up his old interests he becomes a changed man, he is thoughtful of other people and has infinite sympathy with patients and students. But he never resumes his interest in women beyond a purely platonic friendship with Line, a young girl who is the hospital pet, and Ellen Floresco, one of his assistants. He is honored by his country when he is sent to represent her at a Cancer Congress where he has the courage to report the failure of all his research work. The medical reader will notice lack of evidence of his ability or of results to justify his fame as an authority on cancer, but such details would not add to the story, which is, of course, written for the lay mind.

The book is light and easily read, and, written, as it is, by the son of a physician and translated by a physician who is a world renowned neurologist, as well as an author of established repute, it holds much of interest to the physician. In fact anyone who may read it will feel well repaid.

MARGARET WARWICK, M.D.

**INTERNATIONAL CLINICS.** Vol. 1. Thirty-sixth Series. March, 1926. Philadelphia: J. B. Lippincott Co., 1926.

This quarterly publication will be found of interest to anyone in the field of medicine. Its scope includes all the specialties. The book is edited by H. W. Cattell, M.D., of Philadelphia, with contributions of especially prepared original articles by fifteen of the most eminent physicians and surgeons in America and Great Britain. It has numerous illustrated clinical lectures which are not too lengthy to be easily read by the busy practitioner. One finds articles on sequelæ of diphtheria, massive collapse of the lung, cardiac arrhythmias; treatment of appendicitis, of metasymphilitic disorders, of local infection; the use of radium in gynecology.

There are surgical clinics by Dr. C. H. Mayo, from the Broad Street Hospital, New York, and an article on Surgical Treatment of Gastric and Duodenal Ulcers by C. F. Nassau of Philadelphia.

The close of the volume gives the progress of medicine for 1925. This briefly mentions new developments in diagnosis and treatment, with the subjects alphabetically arranged.

E. C. EMERSON, M.D.

**FUNDAMENTALS OF DERMATOLOGY.** Alfred Schalek, M.D., Professor of Dermatology and Syphilology, University of Nebraska College of Medicine. 239 pages. Illus. Cloth, \$3.00. Philadelphia and New York: Lea & Febiger Company, 1926.

The author of this little volume states in his preface that the volume was written in compliance with repeated requests from students and general practitioners and is designed to take the place of the formerly much used compend.

One would hesitate to recommend this type of work on dermatology. It is merely the briefest outline and will probably be used mostly by students preparing for examinations. There is nothing about the book to recommend it over such short treatises as Walker's, Whitfield's, Hazen's, or several other concise texts.

H. E. MICHELSON, M.D.

**THIRD ANNUAL PHYSIOTHERAPEUTIC CONVENTION.** Lectures, Clinics and Discussions on Electro-Physiotherapy. Held at Logan Square Masonic Temple, Chicago, Illinois, October 20-24, 1924, Under the Auspices of H. G. Fischer & Company, Inc. 736 pages. Chicago: H. G. Fischer & Co., Inc., 1925.

This book of 736 pages is a compilation of the Minutes of the Third Annual Physiotherapeutic Convention, together with reprints of each paper presented before the body. The Convention was held under the auspices of the H. G. Fischer Co. The physicians invited to read papers had no connection with the Fischer Co.

Most of the authors take a conservative viewpoint and present their experiences with physiotherapeutic modalities simply as an adjunct in the general therapy of particular cases and in no way try to minimize or discard accepted therapeutic principles.

The book will impress the reader with the large variety of uses physiotherapeutic modalities are being put to and the increasing respect the medical profession is showing towards this field of therapy.

WM. P. SADLER, M.D.

**SORRELL AND SON.** Warwick Deeping. Borzoi books. \$2.50. New York: Macmillan Company, 1926.

A definite charm of style and an able description of both setting and characters recommend this recent novel. A number of the characters, while being far from perfect mortals, have characteristics which stimulate emulation.

Sorrell's whole hearted dedication to his son's training and his own ultimate triumph over post-bellum difficulties furnish the warp of the story. One experiences a definite regret that an otherwise ideal parent could not give his young doctor son a nobler attitude toward the fair sex which would have enabled the son to avoid an entanglement which in real life is not so easily solved as in this novel.

The heroine's attitude toward marriage is doubtless meant to typify modern English and perhaps American tendencies. The heroine is eventually impressed with the fact that the custom of marriage is still necessary.

The fatal overdose of morphine given to Sorrell, who was undoubtedly incurable, brings up again the



question of whether the act was morally right though legally wrong. If the doctor son was right in this particular case then doctors throughout the world would be morally justified in putting thousands of individuals whom medical judgment had declared incurable out of existence. The idea is totally at variance with medical tenets. Our function is to spare life, not destroy it. If our diagnoses were infallible, it might be different. The time has not come when a consensus of several opinions is recognized by law. If the surgeon son had been a little more experienced it might have occurred to him that his father could have been kept comfortable with opiates without resorting to fatal overdosage.

CARL B. DRAKE, M.D.

**PRACTICAL DIETETICS IN HEALTH AND DISEASE**, Sanford Blum, M.D. 2nd Edition. 362 pages. Cloth, \$4.00. Philadelphia: F. A. Davis Co., 1926.

The subject matter of this volume is arranged in two sections. The first section covers dietetics for adults and the other for infants and children. The book is printed on a good quality of paper and has large clear type and reads easily. The diets are arranged alphabetically according to the condition to be treated, thus affording a ready access to the special diet desired. In addition there is a splendid index which enhances the value of the book.

Although one may not entirely agree with the author as to specific diets recommended for certain conditions the list will be of great assistance to anyone desiring sample diets and a general outline of the management of diet in the normal individual as well as in the various pathological conditions.

HARRY OERTING, M.D.

**MICROBE HUNTERS**. Paul De Kruif. \$3.50. New York: Harcourt, Brace & Co., 1926.

This book is obviously written for the lay reader, but it is of unusual interest to the physician and medical student, and it will enliven their leisure hours without consuming a great deal of mental energy. It tells in a very dramatic and slightly fanciful manner of the great men who have contributed momentous discoveries to the science of medicine, men who have all been fired by the divine spark of the true research spirit.

The chronicle begins with Leeuwenhoek, who, two hundred and fifty years ago, was grinding his own lenses and examining everything within his reach, and it also includes Spallanzani, Pasteur, Koch, Roux and Belering, Metchnikoff, Theobald Smith, Bruce, Ross, V.S., Grassi, Walter Reed, and Ehrlich. The story of the struggles of each, as well as their personal characteristics, are given so vividly that these heroes of medical history become to us real living personalities and we see, as in a dear friend, their great virtues, together with their very human faults and frailties. We see them pursue their beloved research in the face of almost insurmountable difficul-

ties. We see them disagree with each other in a very childish manner and we see the competition between Koch and Pasteur become an international issue until, goaded by their respective countries, they are driven to make premature statements of their discoveries. Different types of researchers are shown by the author's characterization of Metchnikoff and Theobald Smith. Of the former he says, "Metchnikoff was always doing experiments to defend an idea, and not to find the hidden truths of nature."

And of the latter, "Theobald Smith was all for biting into the unknown in places where there was a chance of swallowing it without mental indigestion."

But the greatest truth is spoken when he says: "And yet today we demand with a great hue and cry more laboratories, more microbe hunters, better paid searchers to free us from the diseases that scourge us. How futile! For progress, God must send us a few more marvelous searchers of the kind of Robert Koch."

At the same time that we find the subject fascinating we find our esthetic sense offended by the style which strongly suggests yellow journalism. In an attempt to attract the lay interest, to get away from medical terms, and to embellish the dry historical facts, the author has affected a style which does not at all fit his subject, and we find such expressions as "diphtheria was playing hell," "he dug ghoulishly," "inferentially curious," "bawled with the belly-ache," "where God is as popular as a Soviet would be in Wall Street," abounding in practically every page. In the chapter dealing with the conquest of yellow fever he employs excusable biting sarcasm such as, "General Wood was kind to Walter Reed. He gave him money to build a camp of seven tents and two little houses,—to say nothing of a flag-pole,—but best of all he gave him money to buy men who would get handsomely paid for taking a sure one chance out of five of never having a chance to spend the money."

But even while we feel that the style lacks the dignity of the subject we must admit that it fails to spoil the book, and those who desire to be entertained and educated at the same time will find their hopes realized in "Microbe Hunters."

MARGARET WARWICK, M.D.

**OCULAR THERAPEUTICS**. Doctor Ernst Franke, A.O., Professor of Ophthalmology and Chief of the Second Eye Clinic of Hamburg. Translated by Clarence Loeb, A.M., M.D., Oculist to Michael Reese Hospital, Chicago. 183 pages. Cloth, \$3.50. St. Louis: C. V. Mosby Company, 1925.

This little book on the medical treatment of eye diseases covers the subject in a very complete manner. There are no lengthy discussions as to the best treatment, but rather a brief mention of all possible therapeutic agents.

The first half of the book contains general and local measures that are used in eye diseases and the last half goes a little more into detail as to the treatment of each individual anatomical part of the eye.

It is a very interesting and instructive book.

K. C. WOLD, M.D.

## THE RADIOACTIVITY OF NATURAL WATERS

The presence of radioactivity in mineral waters was accepted by many as an explanation of the alleged clinical effects of such waters that had attained some reputation through their use medicinally for bathing or drinking. After careful consideration of the evidence now available, the Council on Pharmacy and Chemistry of the American Medical Association concluded not to accept any radium solution for internal use the dosage of which is less than 2 micrograms per day, or any radon (radium emanation) generator that yields less than 2 microcuries of radon during each twenty-four hours. It has been estimated that to obtain the dose of 2 micrograms by drinking 1 gallon of water, which is considerably more than most people drink in a day, the radioactivity of the water would have to be about 500 millimicrocuries per liter (a millimicrocurie is the radioactivity corresponding to one-billionth gram of radium). A government expert has recently pointed out that although many waters exhibit some radioactivity, the doses necessary to produce detectable effects could not be obtained by drinking reasonable quantities of one of the naturally radioactive spring waters; of most waters it would be necessary to drink from 100 to 1,000 gallons a day. The best evidence is to the effect that, up to this time, it has not been shown that the small amounts of radioactivity found in natural waters have any effect on the medicinal value of the waters. (Jour. A. M. A. Oct. 30, 1926, p. 1480.)

**FOR SALE**—Victor X-ray 9 inch 130 milliamperes—Fluoroscope table. Outfit includes movable Coolidge control, control box with lead glass screens, second timer, stereoscope, and two Coolidge tubes. This machine has been used very little and is in excellent shape. Priced right for quick sale. L. M. Davies, 2103 Harriet Avenue, Apt. 103, Minneapolis, Minnesota.

**FOR SALE**—Entire office equipment of physician and surgeon recently deceased. Includes instruments, alpine sunlight and x-ray machine. Excellent opening for physician in Northwestern Minnesota town of 7,000. Good surrounding territory. Address C-98, care MINNESOTA MEDICINE.

**WANTED**—Salaried appointments for Class A physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

**WANTED**—Physician, young man who can do some orthopedic work. Wonderful opportunity to assist in established practice. Excellent loop location in Minneapolis. Use of reception room, telephone, girl, laboratory and other equipment. Answer giving full particulars. Address C-103, care MINNESOTA MEDICINE.

Let us see how the American Medical Association meets these obligations from a financial point of view. The "Journal of the American Medical Association" had in 1900 about eight thousand subscribers. Today each weekly issue exceeds ninety thousand copies. For this, the physicians of the country pay an annual subscription of five dollars, and the advertising department secures each week from fifty to sixty pages of advertising. The total income derived from these sources is more than one and a quarter millions of dollars. It is this income that has enabled the Association to establish its numerous services to the physician and to the public, that has permitted the erection of the headquarters office, with a staff of almost four hundred people engaged in carrying on the work of education and the editing and printing of its publications. It has made possible the purchase of rotary and flat-bed presses, using sixty tons of paper a week in disseminating scientific, technical and popular information. It has added to the "Journal," formerly the one publication of the Association: "Hygeia," its public magazine of health; some seven journals devoted to the advancement of such medical specialties as surgery, the diseases of children, nervous and mental disease, pathology, the diseases of the skin, and similar subjects; the Spanish edition of the "Journal"; the "American Medical Directory"; the "Quarterly Cumulative Index" to medical literature; and pamphlets for the public on various health topics.

MORRIS FISHBEIN, M.D. *The Century*, Aug., 1926.

**FOR SALE**—Entire 50-room hospital equipment including x-ray machine in excellent condition and surgical instruments. Prices reasonable. Address C-99, care MINNESOTA MEDICINE.

**FOR RENT**—Lowry Building, Saint Paul, office space nicely furnished: waiting room, examining room, telephone and light, \$30.00. Address C-100, care MINNESOTA MEDICINE.

**LABORATORY TECHNICIAN** with experience in routine laboratory, blood chemistry, serology and basal metabolism desires position in doctor's office or hospital. Two years college. Can also do clerical work. Address C-101, care MINNESOTA MEDICINE.

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**OFFICE SPACE FOR RENT**—Suitable for physician, to share reception room with dentist. Telephone Dykewater 3162, or address Masonic Building, 1508 East Lake Street, Minneapolis.

**PHYSICIAN WANTED** for town of 500. Sixteen miles from St. Paul. No other doctor. Established practice. Phone or write Bernier Drug Company, Rosemount, Minnesota.

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*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association  
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J. R. BRUCE

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Accepted for mailing at the special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 13, 1918.

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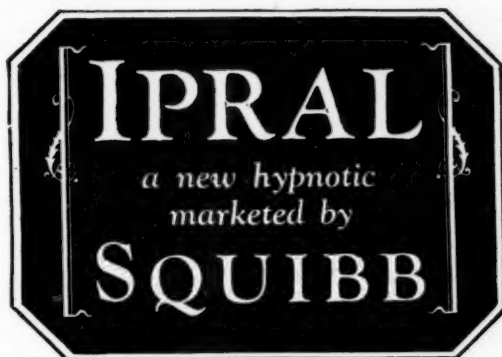
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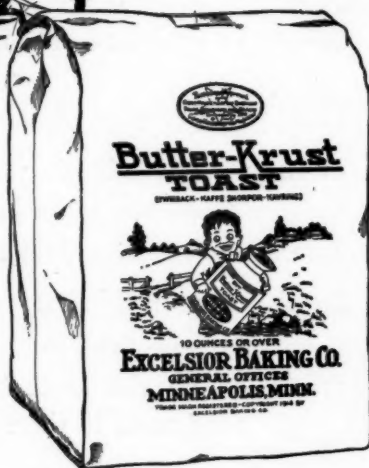
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